

Table of Contents

SECTION 2. PREPARATION FOR USE	2-1
2.1. GENERAL	2-1
2.2. HANDLING	2-1
2.2.1. Handling Equipment	2-1
2.2.2. Electrostatic Discharge	2-2
2.2.2.1. Handling Precautions	2-3
2.3. PREPARATION FOR SHIPMENT AND INSTALLATION	2-4
2.3.1. UTD	2-4
2.3.1.1. Packing the UTD	2-4
2.3.1.2. Moving the UTD	2-4
2.3.1.3. Lifting the UTD	2-6
2.3.1.4. Installing the UTD	2-7
2.3.2. IFT	2-8
2.3.2.1. Packing the IFT	2-8
2.3.2.2. Moving the IFT	2-9
2.3.2.2.1. Visual Structure	2-9
2.3.2.2.2. Instructor Station and Equipment Cabinets	2-11
2.3.2.2.3. Student Station	2-11
2.3.2.3. Lifting the IFT	2-11
2.3.2.4. Installing the IFT	2-12
2.3.3. OFT	2-21
2.3.3.1. Packing the OFT	2-21
2.3.3.2. Moving the OFT	2-22
2.3.3.2.1. Visual Structure	2-22
2.3.3.2.2. Instructor Station and Equipment Cabinets	2-23
2.3.3.2.3. Student Station	2-24
2.3.3.3. Lifting the OFT	2-24
2.3.3.4. Installing the OFT	2-24
2.4. INITIAL CONFIGURATION AND ADJUSTMENTS	2-27
2.4.1. Host Computer	2-27
2.4.1.1. Hard Disk Drive	2-27
2.4.1.2. PCI Bus Single Board Computer Card Assembly	2-27
2.4.2. APS Sound System	2-30
2.4.2.1. Sound System Computer	2-30
2.4.2.1.1. Sound System Computer Setup	2-30
2.4.2.1.1.1. Software Install	2-30
2.4.2.1.1.2. Setup	2-31
2.4.2.1.1.3. Software Setup	2-33
2.4.2.2. Audio Processing System (APS) Unit	2-34
2.4.2.2.1. Configuring the APS Boot Parameters	2-35
2.4.3. Electric Control Loading System (ECLS)	2-37
2.4.3.1. ECL Computer Assembly	2-37
2.4.3.1.1. Hard Disk Drive	2-37
2.4.3.1.2. IP Carrier Card Assembly	2-37

2.4.3.1.3. PCI Bus Single Board Computer Card Assembly	2-38
2.4.3.2. DRI Platform Assemblies.....	2-41
2.4.3.2.1. Platform332 Board IP Modules	2-41
2.4.3.2.2. Platform332 Boards	2-42
2.4.3.2.3. Power Supply Signal Condition Boards	2-45
2.4.3.3. DRI Platform Power Supply	2-47
2.4.3.4. DAS Platform Assembly	2-48
2.4.3.4.1. Industrial Packs	2-48
2.4.3.4.2. Power Supply and Signal Conditioning Board (PSSCB)	2-50
2.4.3.5. DDF File Installation Instructions for new Version of Primary Control Actuator for Torque and Velocity Applications and Toe Brake Actuator	2-51
2.4.3.5.1. Creating a Custom Motor File	2-52
2.4.4. Flight Deck I/O System (FDKIO).....	2-54
2.4.4.1. Hard Disk Drive	2-54
2.4.4.2. PCI Bus Single Board Computer Card Assembly.....	2-54
2.4.4.3. IP Carrier Card Assemblies.....	2-57
2.4.4.3.1. Carrier Card w/ DI IP Modules	2-57
2.4.4.3.2. Carrier Card w/ DO IP Modules.....	2-58
2.4.4.3.3. Carrier Card w/ AI, AO, and RS422 IP Modules.....	2-59
2.4.4.4. ARINC 429 Card Assembly.....	2-60
2.4.5. Instructor Operating System (IOS)	2-61
2.4.5.1. Hard Disk Drive	2-61
2.4.5.2. CD-ROM Drive.....	2-62
2.4.5.3. PCI Bus Single Board Computer Card Assembly.....	2-63
2.4.6. Student Station	2-65
2.4.6.1. Circuit Breaker Panel Covers	2-65
2.4.6.2. Emergency Landing Gear Release Handle.....	2-65
2.4.7. Fire Detection System.....	2-65
2.4.7.1. Thermal Heat Detector	2-67
2.4.8. Networking OFT Projectors.....	2-69
2.4.8.1. Networking Installation.....	2-69
2.5. SUBSYSTEM CABLE CONNECTIONS.....	2-72
2.5.1. APS	2-72
2.6. FTD CHECKOUT	2-73
2.6.1. Pre-operational Checks	2-73
2.6.2. Initial Control Settings Checklist.....	2-73
2.6.2.1. Host, FDKIO, IOS, and ECL Computer Chassis	2-73
2.6.2.2. APS Sound System	2-74
2.6.2.3. Data Acquisition System.....	2-74
2.6.2.4. Digital Servo Remote Power Controller	2-75
2.6.2.5. 7A2 Patch Panel	2-76
2.6.2.6. Digital Servo Amplifier.....	2-77
2.6.2.7. Power Controller	2-78
2.7. ATD STARTUP PROCEDURES	2-79
2.7.1. Equipment Cabinet 9A1 A/C Power Controller Panel	2-79
2.7.2. Image Generator Cabinet	2-79

2.7.3.	VCC Computer	2-79
2.7.4.	Equipment Cabinet 9A2.....	2-80
2.7.5.	Equipment Cabinet 9A3.....	2-80
2.7.6.	Cockpit Frame.....	2-80
2.7.7.	IOS Station.....	2-80
2.7.8.	Cockpit and IOS Station	2-82
2.7.9.	IOS Station.....	2-83
2.8.	STORAGE.....	2-84

List of Figures

FIGURE 2-1.	QUICK RELEASE PIN LOCATION FOR IOS MAIN STRUCTURE AND STAIR STRUCTURE	2-6
FIGURE 2-2.	IFT VISUAL STRUCTURE	2-9
FIGURE 2-3.	IFT BLACKOUT PANELS	2-10
FIGURE 2-4	IFT VISUAL STRUCTURE FASTENER CALLOUT	2-14
FIGURE 2-5.	IFT VISUAL STRUCTURE DOOR.....	2-15
FIGURE 2-6.	IFT VISUAL STRUCTURE SIDEWALL.....	2-16
FIGURE 2-7.	IFT VISUAL STRUCTURE AFT AND SIDE WALLS	2-17
FIGURE 2-8.	IFT VISUAL STRUCTURE TOP AND WALLS.....	2-18
FIGURE 2-9.	IFT VISUAL STRUCTURE FRONT, TOP AND WALLS	2-19
FIGURE 2-10.	IFT VISUAL STRUCTURE COMPLETE.....	2-20
FIGURE 2-11.	OFT VISUAL STRUCTURE	2-23
FIGURE 2-12.	HOST COMPUTER HARD DISK DRIVE CONFIGURATION.....	2-27
FIGURE 2-13.	HOST COMPUTER PCI BUS SINGLE BOARD COMPUTER CARD ASSEMBLY CONFIGURATION	2-28
FIGURE 2-14.	HOST COMPUTER PCI BUS CARD ASSEMBLY JUMPER DESCRIPTION	2-29
FIGURE 2-15.	HOST COMPUTER PCI BUS CARD ASSEMBLY JUMPER DESCRIPTION	2-30
FIGURE 2-16.	NETWORK SETUP	2-31
FIGURE 2-17.	FTP SERVER SETUP	2-33
FIGURE 2-18.	FTP SERVER SETUP	2-34
FIGURE 2-19.	FTP SERVER SETUP	2-35
FIGURE 2-20.	ECLS COMPUTER HARD DISK DRIVE CONFIGURATION.....	2-37
FIGURE 2-21.	ECL SYSTEM IP CARRIER/FIBER OPTIC INTERFACE IP MODULE CONFIGURATION.....	2-38
FIGURE 2-22.	ECLS COMPUTER PCI BUS SINGLE-BOARD COMPUTER CARD ASSEMBLY CONFIGURATION	2-39
FIGURE 2-23.	ECLS COMPUTER PCI BUS CARD ASSEMBLY JUMPER DESCRIPTIONS	2-40
FIGURE 2-24.	IP-16DAC JUMPER CONFIGURATION.....	2-41
FIGURE 2-25.	IP-UNIDIG JUMPER CONFIGURATION	2-42
FIGURE 2-26.	CLS-1 PLATFORM332 BOARD CONFIGURATION	2-43
FIGURE 2-27.	UTL-1 PLATFORM332 BOARD CONFIGURATION.....	2-44
FIGURE 2-28.	PROGRAM GAIN VALUES	2-45
FIGURE 2-29.	POWER SUPPLY SIGNAL CONDITION BOARD CONFIGURATION	2-46
FIGURE 2-30.	LAMBDA DRI PLATFORM POWER SUPPLY	2-47
FIGURE 2-31.	ASTEC DRI PLATFORM POWER SUPPLY	2-47
FIGURE 2-32.	DAS CHASSIS CONFIGURATION	2-49
FIGURE 2-33.	IP-UNIDIG-HV-1618 JUMPER CONFIGURATION.....	2-50

FIGURE 2-34. IP-AD16SS JUMPER CONFIGURATION	2-50
FIGURE 2-35. TYPICAL PSSCB CONFIGURATION.....	2-51
FIGURE 2-36. FLIGHT DECK I/O COMPUTER HARD DISK DRIVE CONFIGURATION.....	2-54
FIGURE 2-37. FLIGHT DECK I/O PCI BUS SINGLE BOARD COMPUTER CARD ASSEMBLY CONFIGURATION	2-55
FIGURE 2-38. FLIGHT DECK I/O COMPUTER PCI BUS CARD ASSEMBLY JUMPER DESCRIPTIONS	2-56
FIGURE 2-39. FLIGHT DECK I/O CIRCUIT CARD LOCATIONS	2-57
FIGURE 2-40. IP CARRIER W/ DI IP MODULES	2-58
FIGURE 2-41. IP CARRIER W/DO IP MODULES	2-59
FIGURE 2-42. IP CARRIER W/ AI, AO, AND RE422 IP MODULES	2-60
FIGURE 2-43. ARINC 429 CARD ASSEMBLY	2-61
FIGURE 2-44. INSTRUCTOR OPERATING SYSTEM COMPUTER HARD DISK DRIVE CONFIGURATION ..	2-62
FIGURE 2-45. IOS COMPUTER CD-ROM DRIVE CONFIGURATION	2-62
FIGURE 2-46. IOS COMPUTER PCI BUS SINGLE BOARD COMPUTER CARD ASSEMBLY CONFIGURATION	2-63
FIGURE 2-47. IOS COMPUTER PCI BUS CARD ASSEMBLY JUMPER DESCRIPTIONS.....	2-64
FIGURE 2-48. MASTER FIRE CONTROL BOARD	2-68
FIGURE 2-49. CONNECTIONS FROM A PROJECTOR TO THE DISPLAY SWITCH.....	2-69
FIGURE 2-50. BUNDLED CABLES.....	2-70
FIGURE 2-51. SPECIFYING NEW IP ADDRESS.....	2-70
FIGURE 2-52. CABLE CONNECTIONS	2-72
FIGURE 2-53. COMPUTER CHASSIS LOCATIONS	2-73
FIGURE 2-54. POWER SUPPLY SWITCHES ON REAR OF COMPUTER CHASSIS	2-74
FIGURE 2-55. DAS.....	2-75
FIGURE 2-56. DIGITAL SERVO REMOTE POWER CONTROLLER.....	2-75
FIGURE 2-57. 7A2 PATCH PANEL FUSE LOCATION	2-76
FIGURE 2-58. SERVO AMPLIFIERS LOCATION.....	2-77
FIGURE 2-59. AC POWER CONTROLLER.....	2-78

List of Tables

TABLE 2-1. APS BOOT PARAMETERS	2-36
--------------------------------------	------

SECTION 2. PREPARATION FOR USE

2.1. GENERAL

This section is intended to provide general guidelines for preparing the trainer and its components for shipment and for use. It is not a comprehensive set of instructions for assembling, testing, and accepting the components or the FTD. It does, however, address those individual components that require adjustment, configuration, or checkout before operation. Additional procedures may be found in Section 5 of this manual.

2.2. HANDLING

2.2.1. Handling Equipment

Proper handling of all equipment is essential. The following are ideas to keep in mind during setup and general maintenance.

- Do not move the trainer while hard drives are operating as the hard drives are sensitive to mechanical abuse.
- Do not block fan intakes or ventilation openings.
- Do not use unapproved fire extinguishers for electrical fires. This is to minimize damage and prevent electrical shock.
- Never remove or replace circuit boards or electrical components while power is applied to the trainer.
- Do not touch circuit boards, internal cables, or other electronic equipment without observing electrostatic discharge (ESD) precautions.
- Do not allow the component surface of circuit boards to touch other boards or the sides of the chassis during removal or replacement. Diodes and other small components can easily break off.
- Do not remove any components or assemblies out of their static shielded containers until ready for installation.
- Do not place hard disk drives or any magnetic media near a source of magnetism. Files will be damaged when magnetism is applied to magnetic media.
- Do not place CRTs near a source of strong magnetism. When magnetism is applied to the monitor, the image may be distorted and color may become irregular.
- Ensure that no debris, staples, paper clips or other metal pieces fall into ventilation openings or fan intakes.

- Do not start any maintenance on electrical components before putting on a wrist strap and connecting its ground lead to a chassis ground. A good rule to follow regarding the wrist strap is first on - last off.

2.2.2. Electrostatic Discharge

CAUTION

**VINYL COVERED MANUALS GENERATE
STATIC ELECTRICITY. MANUALS
SHOULD BE KEPT AS FAR AS POSSIBLE
FROM ALL COMPONENTS AND
ASSEMBLIES.**

The following paragraphs provide information for and direction in the proper handling of devices sensitive to electrostatic discharge, shock, and heat. Appendix B contains excerpts about ESD damage from a variety of sources.

Components considered to be ESD sensitive, although the degree of sensitivity varies among devices, include:

- Integrated Circuits
- Circuit Boards
- Transistors
- Diodes
- Solid State Relays
- Memory Modules
- Magnetic Media (i.e., floppy disks, tapes, hard disk drives)

ESD damage is caused by the discharge of static electricity. This damage can take three different forms. The first form is the destruction of a device when someone or something that has a static electrical charge handles it. Most of the time this type of failure is not identified as an ESD caused failure and the component is routinely replaced without regard to the real cause of the failure or the ESD problem.

The second form ESD damage can take is when an ESD sensitive device is degraded when damaged by a static discharge. When this happens, the device may perform acceptably for a while. However, a slight change in operating conditions such as a power supply variation or a change in operating temperature will cause the device to fail. This may cause occasional errors, intermittent operation, or hard failures. This occurs even though the operating conditions are still well within the specifications of the device.

The third and most often overlooked problem caused by static electricity is that of contamination. The more static electricity present in an environment, the greater the likelihood of contamination problems.

2.2.2.1. Handling Precautions

- Ensure that adequate space exists around the unit so that proper cooling can take place. Do not block fan intakes or ventilation openings.
- Use only fire extinguishers approved for electrical fires to minimize damage and prevent electric shock.
- Never remove or replace any circuit boards while power is on except for approved “hot swappable” design components.
- Do not touch circuit boards, internal cables, or any board components without observing static discharge precautions.
- Do not pick up magnetic media (i.e., floppy disks, tapes, or hard drives) without observing static discharge precautions.
- Do not place magnetic media (i.e., floppy disks, tapes, or hard drives) near a source of magnetism.
- Ensure that all components and assemblies are kept in a static shielded or conductive container until ready for installation.
- Before beginning any work, put on a ground wrist strap and connect its lead to chassis ground. The wrist strap should be put on before any work is started, including removing covers or doors, etc. A good rule to follow regarding the wrist strap is:

FIRST ON – LAST OFF

- All assemblies should be immediately placed on a grounded conductive work surface.
- When all work has been completed, remove the wrist strap and the work ground cord.
- Appendix B of this manual contains excerpts about ESD from a variety of sources.

2.3. PREPARATION FOR SHIPMENT AND INSTALLATION

Assembly, checkout, and integration of the flight training devices are accomplished at the FlightSafety Simulation facility. Upon delivery to the customer facility, FlightSafety personnel reassemble the simulator and check the systems.

The following are general guidelines in preparing the flight training devices for shipment:

- 1) Log off all systems using the procedures found in Section 3 of this manual.
- 2) Remove power from simulator systems using the procedures found in Section 3 of this manual.
- 3) Remove facility power from the flight training device.
- 4) Secure all components to prevent damage during shipment.
- 5) Remove all loose material from the training device.
- 6) Disconnect all external cables and label them for reconnection.

The following paragraphs outline packing, moving, and installing devices. These procedures should only be used as a guide. Facility requirements and methods of handling equipment are site specific.

2.3.1. UTD

The UTD consists of a Student Station, Instructor Station, and Equipment Cabinets. Prepare the UTD for shipment using the guidelines set forth at the beginning of paragraph 2.3. Use the following procedure as a guide to pack, move, lift, and install the device. **A licensed forklift operator and a forklift are required to move the UTD structures.**

2.3.1.1. Packing the UTD

- 1) Remove the monitors, keyboard, mouse, and all loose and extraneous material from the instructor station. Wrap breakable items appropriately and pack them in shipping containers.
- 2) Remove all loose and extraneous material from the student station. Wrap breakable items appropriately and pack them in shipping containers.
- 3) Secure all components in the student station, instructor station, and equipment cabinets.
- 4) Remove all external cables from the student station, instructor station, and equipment cabinets. Label them for connection and pack in appropriate shipping containers.

2.3.1.2. Moving the UTD

The Instructor Operator Station (IOS) and Equipment Cabinets of the UTD flight training device have heavy-duty, wheeled jack assemblies installed so they can be moved if necessary. Raise these leveling jacks fully before maneuvering the device into position for training or shipment. The Student Station (cockpit) requires the use of dollies or a pallet jack lifter to move. The following paragraph provides information about moving the device.

CAUTION

**DO NOT MOVE THE FLIGHT TRAINING
DEVICE STRUCTURES BY THEIR
HANDRAILS. THE HANDRAILS ARE NOT
DESIGNED TO BE PULLED OR PUSHED.**

CAUTION

**DO NOT PLACE THE FLIGHT TRAINING
DEVICE STRUCTURES ON AN INCLINED
OR UNEVEN SURFACE.**

- 1) Remove the floor plate connecting the instructor station and student station.
- 2) The IOS platform consists of two major components, the main structure assembly and the stair structure assembly. These assemblies are moveable structures mounted on casters and secured together with quick-release pins. The pins are located on either side of the split point at the bottom of each structure. Figure 2-1 shows the location of the pins. Remove the two pins.

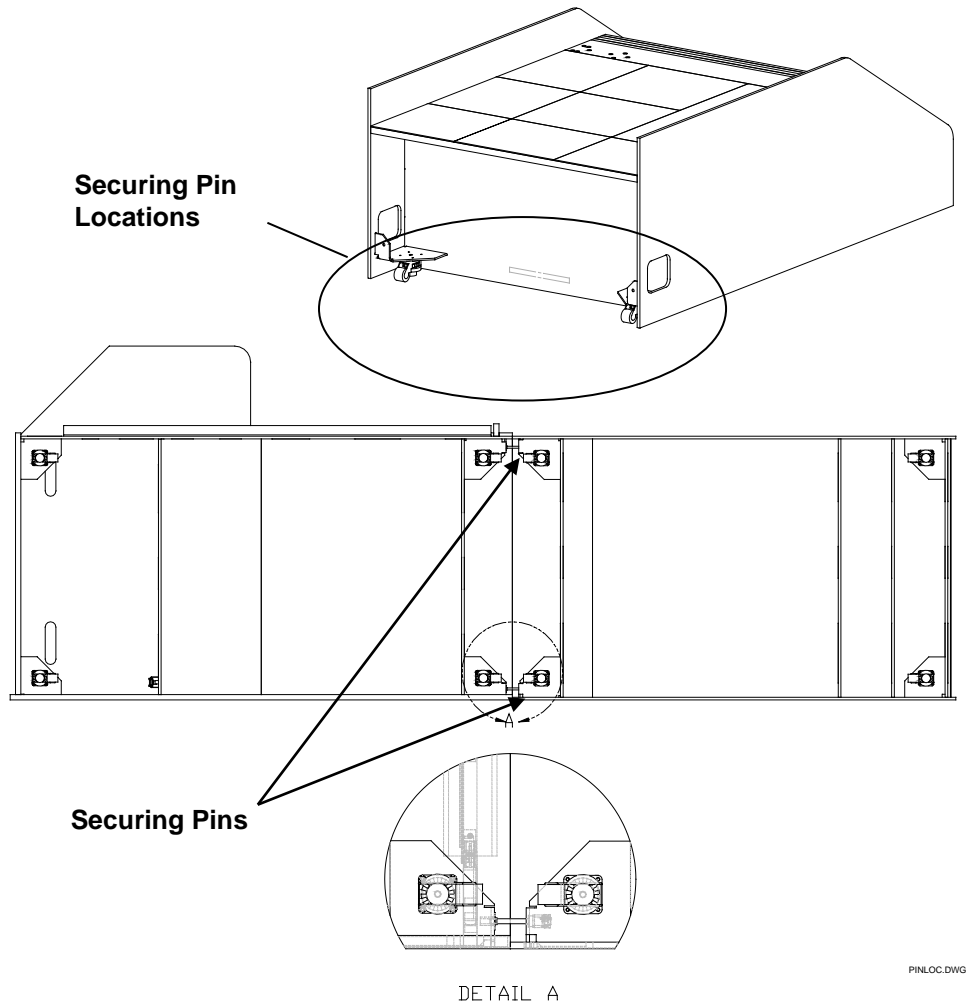


Figure 2-1. Quick Release Pin Location for IOS Main Structure and Stair Structure

- 3) On the IOS main structure assembly, loosen the locknuts on the leveling jacks and raise the jacks to their full up position. The structure will rest on its casters.
- 4) On the IOS stair structure assembly, loosen the locknuts on the leveling jacks and raise the jacks to their full up position. The structure will rest on its casters.
- 5) On the equipment cabinets, remove the trim panels and unlock the casters. The equipment cabinets will rest on the casters.
- 6) On the student station, loosen the locknuts on the leveling jacks and raise the jacks to their full up position.

2.3.1.3. Lifting the UTD

The following provides information about lifting and loading the major structures of the flight training device. The forklift used to lift the device must be capable of lifting approximately 3,000 pounds and have forks spanning the width of the structure.

CAUTION

**THE FLIGHT TRAINING DEVICE
STRUCTURES MUST BE ON A LEVEL
SURFACE BEFORE THE FORKLIFT CAN
BE POSITIONED UNDER THE
STRUCTURE.**

To prevent the forklift from damaging the base frame weldment of the structures, place a piece of wood on top of, and parallel with, each fork.

2.3.1.4. Installing the UTD

Installation location and requirements for the flight training devices are site specific. Refer to the facility installation drawing for site requirements and installation location. The following are general guidelines to use when installing a flight training device.

LOCATION SELECTION

- The floor must be level, flat, and able to support the full weight of the FTD.
- Accessibility must be adequate on all sides of the structures to allow proper cooling and general maintenance.
- Overhead clearance must be adequate for persons moving within the device.
- Ensure protection from dust, heat, splash, and drip.

RECEIVING

- Observe all precautions found outside and inside the shipping containers.
- Inspect shipping containers for damage.
- After unpacking, inspect equipment for damage in transit. If damage is found, document according to established procedures.

HANDLING

- Take measures to avoid ESD when handling electronic components. Refer to paragraph 2.2.2, Electrostatic Discharge.
- Use proper and safe methods to move the equipment.
 - 1) On the student station, verify that the leveling jacks are adjusted to the up position. Move the student station to the required location in accordance with the facility engineering drawings and adjust the leveling feet as required.
 - 2) When the student station is in the required location, rotate the leveling jacks to the down position until the structure is stable and level.
 - 3) Move the IOS main structure on its casters to its required location.
 - 4) Install the floor plate connecting the instructor station and student station.
 - 5) Move the IOS stair structure on its casters to its required location. Join the stair structure to the main structure and install the securing pins.

- 6) Move the equipment cabinets on their casters to their required location in accordance with the facility engineering drawings.
- 7) When they are in the required location, lock casters in place and re-install trim plates.
- 8) In the equipment cabinets, ensure all circuit boards in the Host, IOS, Aural Cue, Flight Deck I/O, and Electrical Control Loading Computers are properly seated.
- 9) Confirm all equipment cabinet components are locked in their respective slide rails or trays and there are no loose components.
- 10) On the student station, ensure the DRI module assembly circuit boards and industry packs are properly seated.
- 11) Confirm all student station components are locked in their respective slide rails or trays and there are no loose components.
- 12) Check all cable connections to verify none were disconnected during shipment. Refer to engineering drawings for cable locations.
- 13) Confirm that all circuit breakers are in the OFF position.
- 14) Reconnect all external cables, except facility, using the labels and engineering drawings as a guide.
- 15) Place the IOS monitors, keyboard, and mouse in the IOS console and connect all cables using the engineering drawings as a guide.
- 16) Reconnect facility cables using engineering drawings as a guide.
- 17) To prepare the training device for operation, all subsystems and components must be checked out and powered on. Paragraph 2.6, FTD CHECKOUT, will help ensure each subsystem or component is inspected.

2.3.2. IFT

The IFT consists of a Visual system, Student Station, Instructor Station, and Equipment Cabinets. Prepare the IFT for shipment using the general guidelines set forth at the beginning of paragraph 2.3. Use the following procedure as a guide to pack, move, lift, and install the device. **A licensed forklift operator and a forklift are required to move the IFT structures.**

2.3.2.1. Packing the IFT

- 1) Remove the monitors, keyboard, mouse, and all loose and extraneous material from the instructor station. Wrap breakable items appropriately and pack them in shipping containers.
- 2) Remove all loose and extraneous material from the student station. Wrap breakable items appropriately and pack them in shipping containers.
- 3) Secure all components in the student station, instructor station, and equipment cabinets.
- 4) Remove all external cables from the visual system, student station, instructor station, and equipment cabinets. Label them for connection and pack in appropriate shipping containers.

2.3.2.2. Moving the IFT

2.3.2.2.1. Visual Structure

The visual system for the IFT is a narrow field of view system consisting of a visual blackout structure with a projector and screen mounted to it. Figure 2-2 shows the IFT visual structure. The blackout structure must be disassembled before moving the training device. How much the structure is disassembled depends on where, how, and how far the structure is being moved. To disassemble the visual structure:

- 1) Ensure power to the visual structure lights and fans has been removed. Disconnect or remove all external cables labeling them for reconnection.
- 2) Ensure the visual system is logged off and powered off in accordance with procedures in the visual documentation.
- 3) Disconnect or remove all external cables from the visual projector labeling them for reconnection.

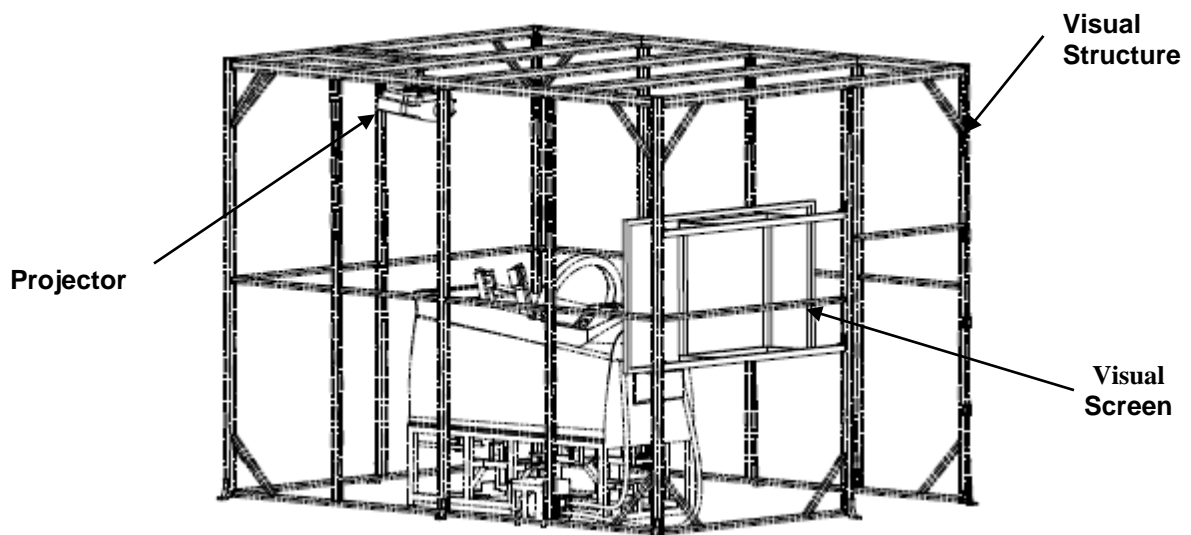


Figure 2-2. IFT Visual Structure

CAUTION

THE PROJECTORS CAN BE SUCCESSFULLY REMOVED BY ONE PERSON; HOWEVER, IT IS RECOMMENDED TWO PERSONS PERFORM THIS ACTION.

- 4) The projector mounting bracket is provided with a self-contained hoist system for easy removal and installation of the projectors. Locate and remove the lift cord from the projector mount and attach to the hoist. Remove the hardware securing the projector to the mounting bracket on the ceiling, while maintaining tension on the hoist cord. Then, using the hoist, carefully lower the projector and guide it into a suitable packing container.

CAUTION

THE VISUAL SCREEN IS HEAVY. USE TWO PEOPLE WHEN HANDLING THE VISUAL SCREEN.

- 5) Remove the hardware securing the visual screen to its mounting brackets. Using two people, carefully remove the visual screen and place in a suitable packing container guarding against scratching or marring the reflective surface.
- 6) The blackout panels, except the top most section, are attached to the structure with a hook-and-pile type of fastener, such as Velcro™. The top-most section of blackout panels is secured to the top cross member of the structure using quick-release knobs. See Figure 2-3. Remove the blackout panels from the visual structure.

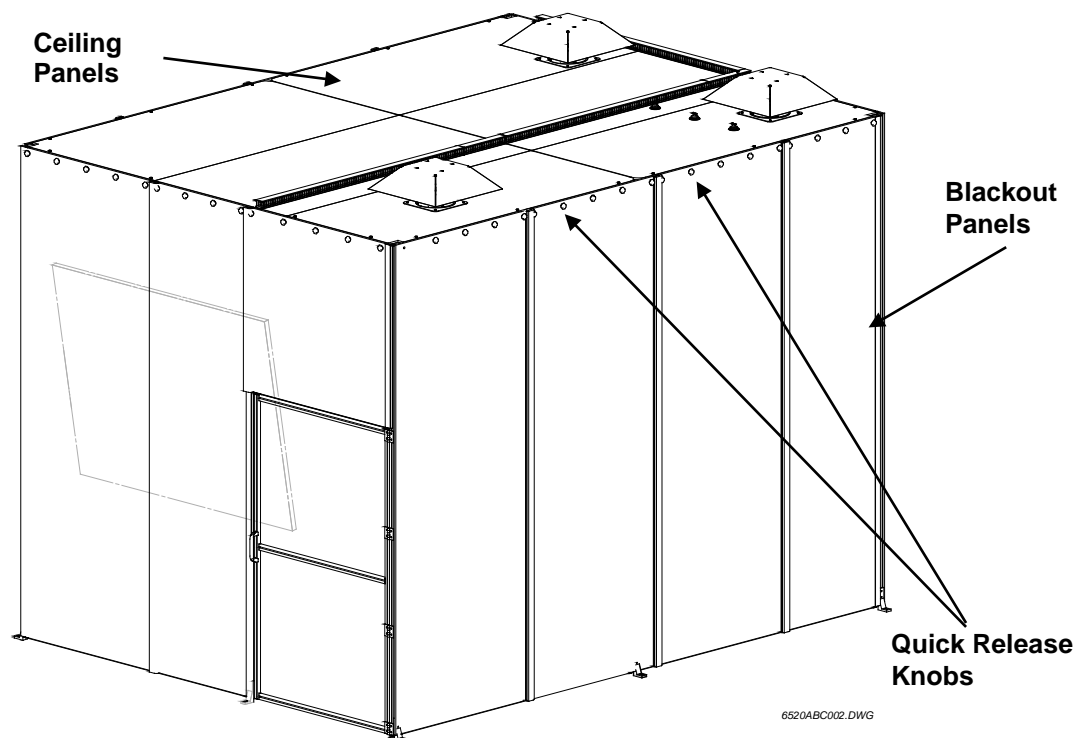


Figure 2-3. IFT Blackout Panels

- 7) The ceiling panels are secured to the visual structure using common hardware. Remove the hardware securing the ceiling panels to the structure and remove the ceiling panels using a forklift or crane.
- 8) The visual structure is bolted to the floor. Remove and retain the mounting bolts and disassemble the visual structure in sections to the appropriate level. Place the visual structure sections in suitable shipping containers.

2.3.2.2.2. Instructor Station and Equipment Cabinets

The Instructor Station and Equipment Cabinets of the IFT flight training device are provided with heavy duty, wheeled jack assemblies installed so they can be moved if necessary. These leveling jacks must be fully raised before the structures can be maneuvered into position for training or shipment. Use steps 1 through 5 of paragraph 2.3.1.2. MOVING THE UTD as a guide for moving the IFT instructor station and equipment cabinets.

CAUTION

**DO NOT MOVE THE FLIGHT TRAINING
DEVICE STRUCTURES BY THEIR
HANDRAILS. THE HANDRAILS ARE NOT
DESIGNED TO BE PULLED OR PUSHED.**

CAUTION

**DO NOT PLACE THE FLIGHT TRAINING
DEVICE STRUCTURES ON AN INCLINED
OR UNEVEN SURFACE.**

2.3.2.2.3. Student Station

The student station is secured to the floor with four mounting bolts on the frame and four on the seat actuator. Remove and retain the mounting bolts. Secure the seat actuator for shipment.

2.3.2.3. Lifting the IFT

The following provides information about lifting and loading the major structures of the flight training device. The forklift used to lift the device must be capable of lifting approximately 3,000 pounds and have forks spanning the width of the structures.

CAUTION

**THE FLIGHT TRAINING DEVICE
STRUCTURES MUST BE ON A LEVEL
SURFACE BEFORE THE FORKLIFT CAN
BE POSITIONED UNDER THE
STRUCTURE.**

To prevent the forklift from damaging the base frame weldment of the structures, place a piece of wood on top of, and parallel with, each fork.

2.3.2.4. Installing the IFT

Installation location and requirements for the flight training devices is site specific. Refer to the facility installation drawing for site requirements and installation location. The following are general guidelines to use when installing a flight training device.

LOCATION SELECTION

- The floor must be level, flat and able to support the full weight of the IFT.
- Accessibility must be adequate on all sides of the structures to allow proper cooling and general maintenance.
- Overhead clearance must be adequate for persons moving within the training device.
- Ensure protection from dust, heat, splash, and drip.

RECEIVING

- Observe all precautions found outside and inside of the shipping containers.
- Inspect shipping containers for damage.
- After unpacking, inspect equipment for damage in transit. If damage is found, document according to established procedures.

HANDLING

- Take measures to avoid ESD when handling electronic components. Refer to paragraph 2.2.2. Electrostatic Discharge.
- Use proper and safe methods to move the equipment.
 - 1) Using a forklift, move the student station to the required location in accordance with the facility engineering drawings.
 - 2) When the student station is in the required location, use the cockpit frame as a template to locate and drill the floor mounting holes into the facility floor.
 - 3) Move the student station out of the way, then using the seat actuator as a template, locate and drill the floor mounting holes into the facility floor.
 - 4) Secure the student station to the floor using the hardware retained in paragraph 2.3.2.2.3.
 - 5) Secure the seat actuator to the floor using the hardware retained in paragraph 2.3.2.2.3.
 - 6) Reattach the drive mechanism to the cockpit.
 - 7) Move the IOS main structure on its casters to its required location.
 - 8) Install the floor plate connecting the instructor station and student station.
 - 9) Move the IOS stair structure on its casters to its required location. Join the stair structure to the main structure and install the securing pins.
 - 10) Move the equipment cabinets on their casters to their required location in accordance with the facility engineering drawings.
 - 11) When they are in the required location, lock casters in place and re-install trim plates.

12) Assemble and install the visual structure using the IFT Projector/Screen Installation drawing (6711ABC010) to locate it. Using the mounting hardware retained in step 8, paragraph 2.3.2.2.1, mount the visual structure to the facility floor.

a) Inventory the parts for the IFT Visual structure. Refer Figure 2-4.

Part	QTY	Part	QTY
A	1	H	7
B	2	I	1
C	1	J	3
D	4	K	2
E	2	L1	4
F1	1	L2	4
F2	3	M	2
F3	1	N	1
G	2	O	1
HARDWARE			
PART	QTY		
S	86		
U	22		
HINGES	4		
CLOSURES	2		
GASKET	1		

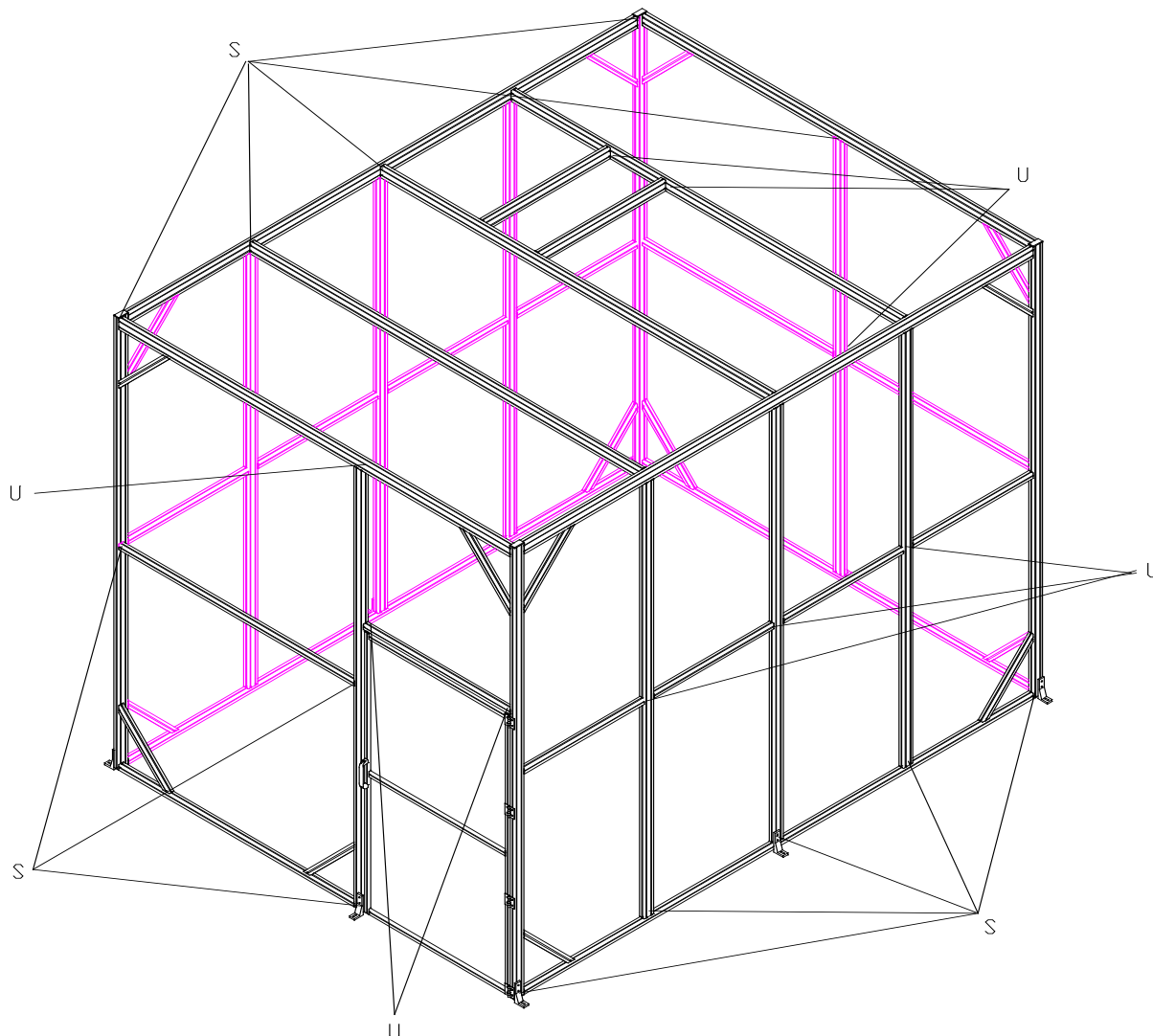


Figure 2-4 IFT visual Structure Fastener Callout

- b) Assemble Door using the following parts: 3 of J, 2 of K, Door panels, rubber gasket and 6 each of the “S” type hardware. Assemble door and set aside; it will be the last part of the assembly. See Figure 2-5.

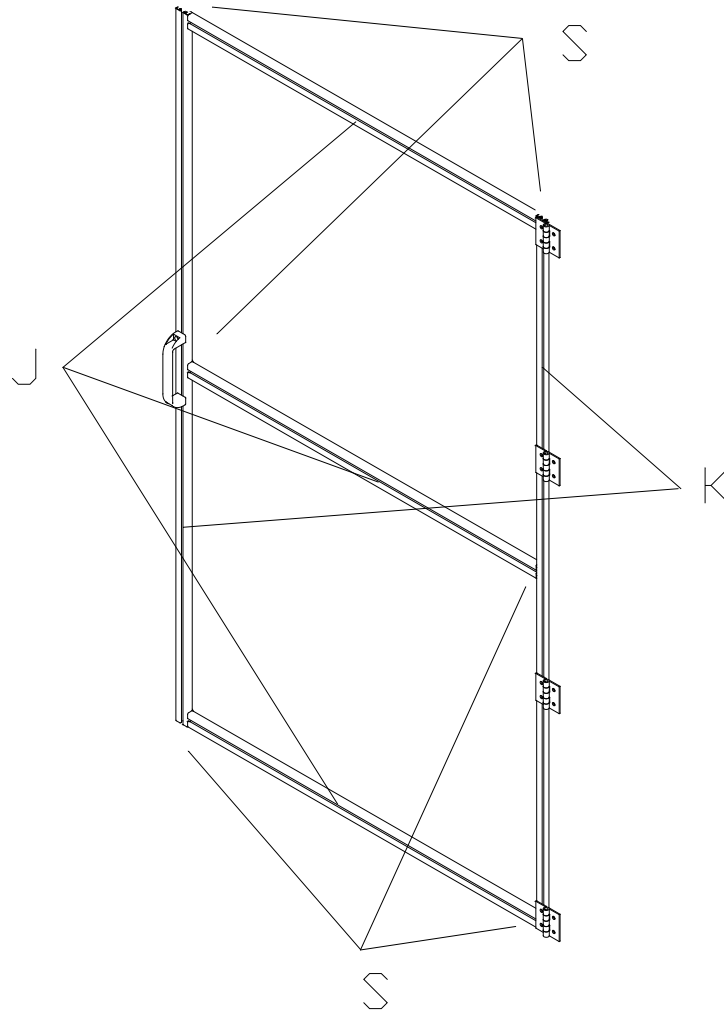


Figure 2-5. IFT Visual Structure Door

- c) Layout the pieces for the side wall assemblies using the following parts: 1 of B, 3 of H, 2 of D, 1 of E, 2 of L1 and 2 of L2. Hardware needed as follows: 20 of the “S” type and 8 of the “U” type. For ease of assembly, it is recommended that six 12-inch 4X4 blocks be used to raise the assemblies off the floor for tool clearance. When laying out, you need 6 of the “U” type hardware mounted 90° toward the inside of the structure, 3 on each wall top rail (these are for the top pieces that will be installed later). Assemble both walls **BEFORE** proceeding to the next step. See Figure 2-6.

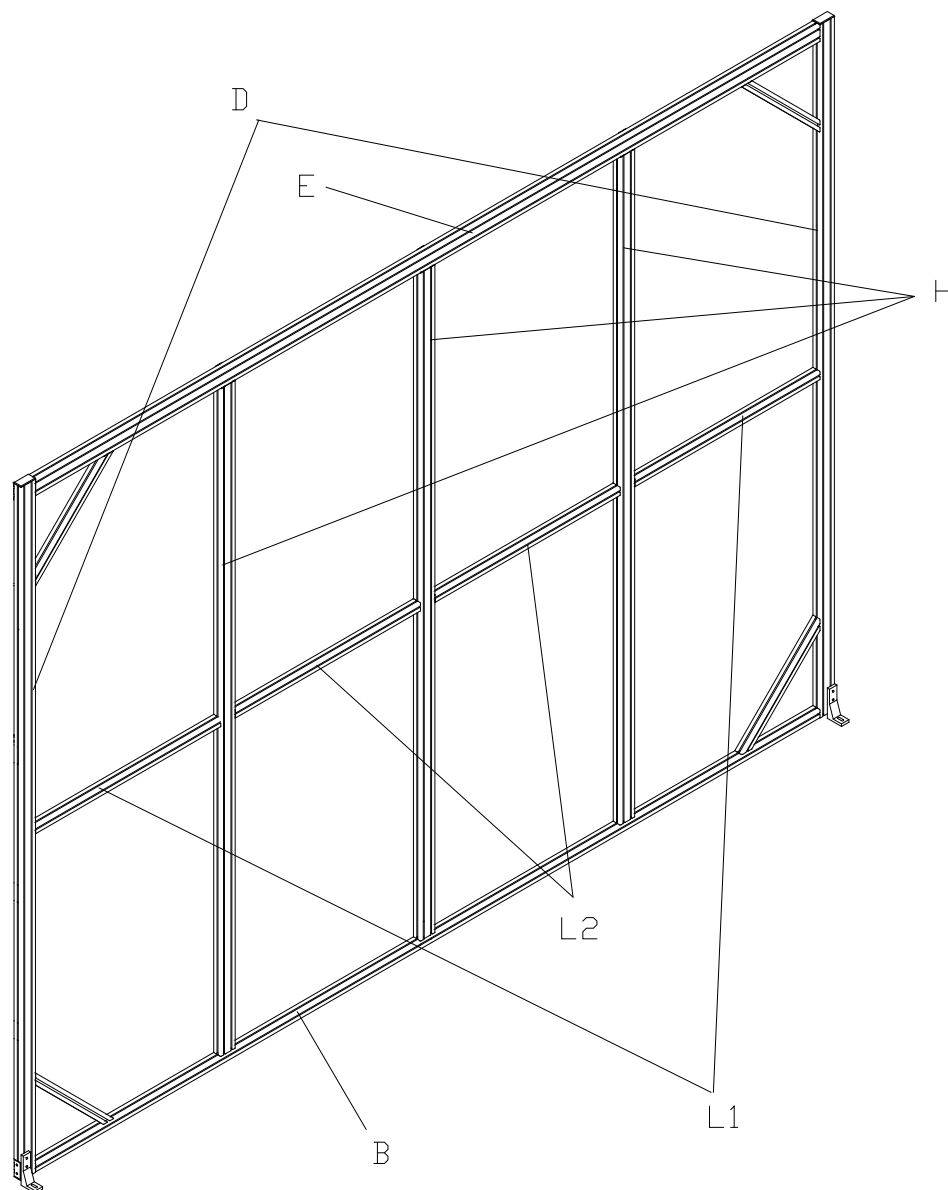


Figure 2-6. IFT Visual Structure Sidewall

- d) Assemble the aft wall by using parts A, H, F1 and 2 of the “S” type hardware. Connect A to H first, then use part F1 to tie the two sidewalls together. After the sidewalls are together, install both of part M using 2 of the “S” and 2 of the “U” type hardware. You will need a minimum of two people to accomplish this safely. See Figure 2-7.

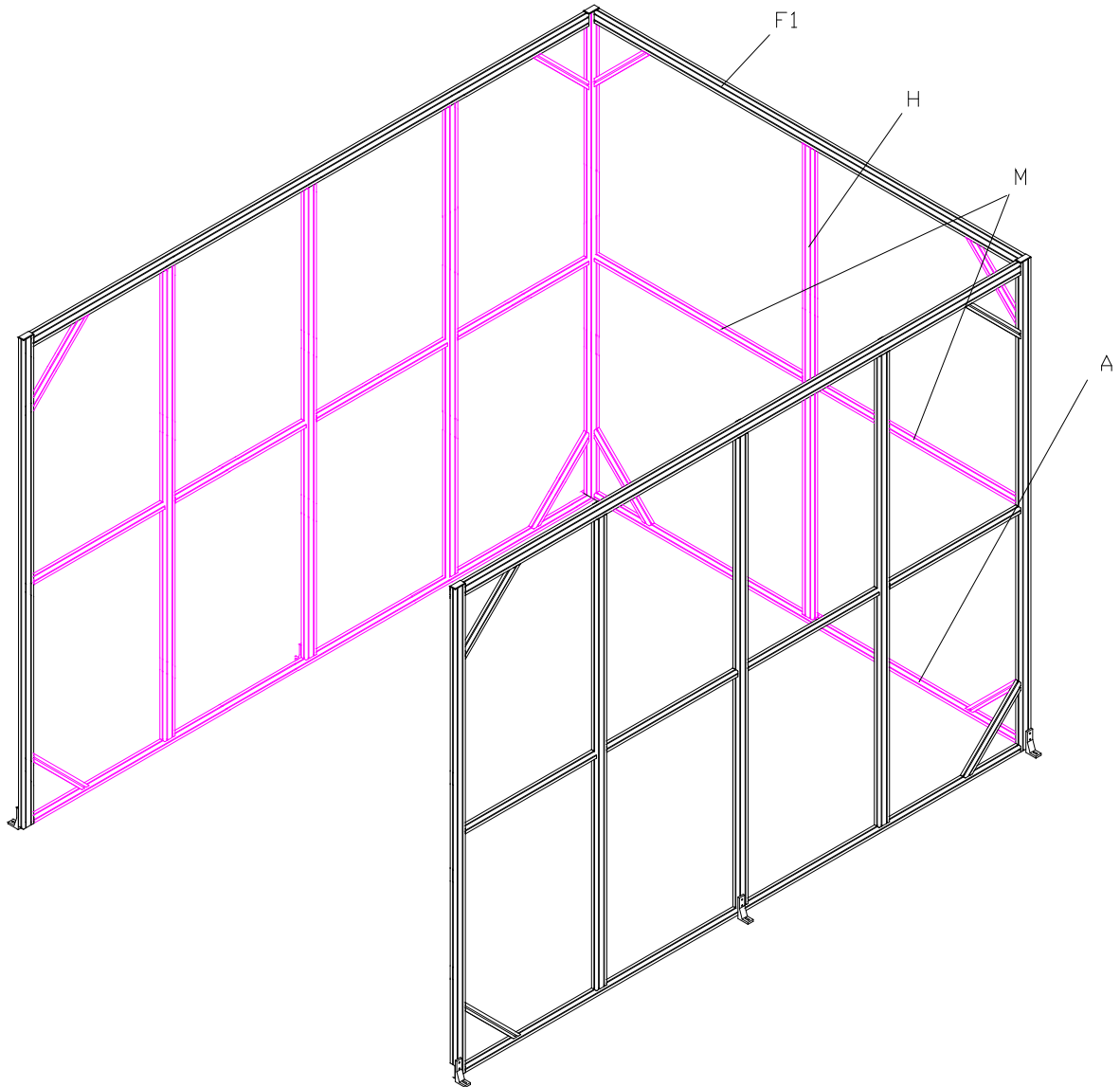


Figure 2-7. IFT Visual Structure Aft and Side Walls

- e) Assemble the top section one rafter at a time, working from the aft wall to the forward section. Install 3 of part F2 for the center rafters, tightening down one side and keeping the other side finger tight for adjustment. It is best to work both ends hex screws at the same time to ensure proper tightening of the hardware. See Figure 2-8.

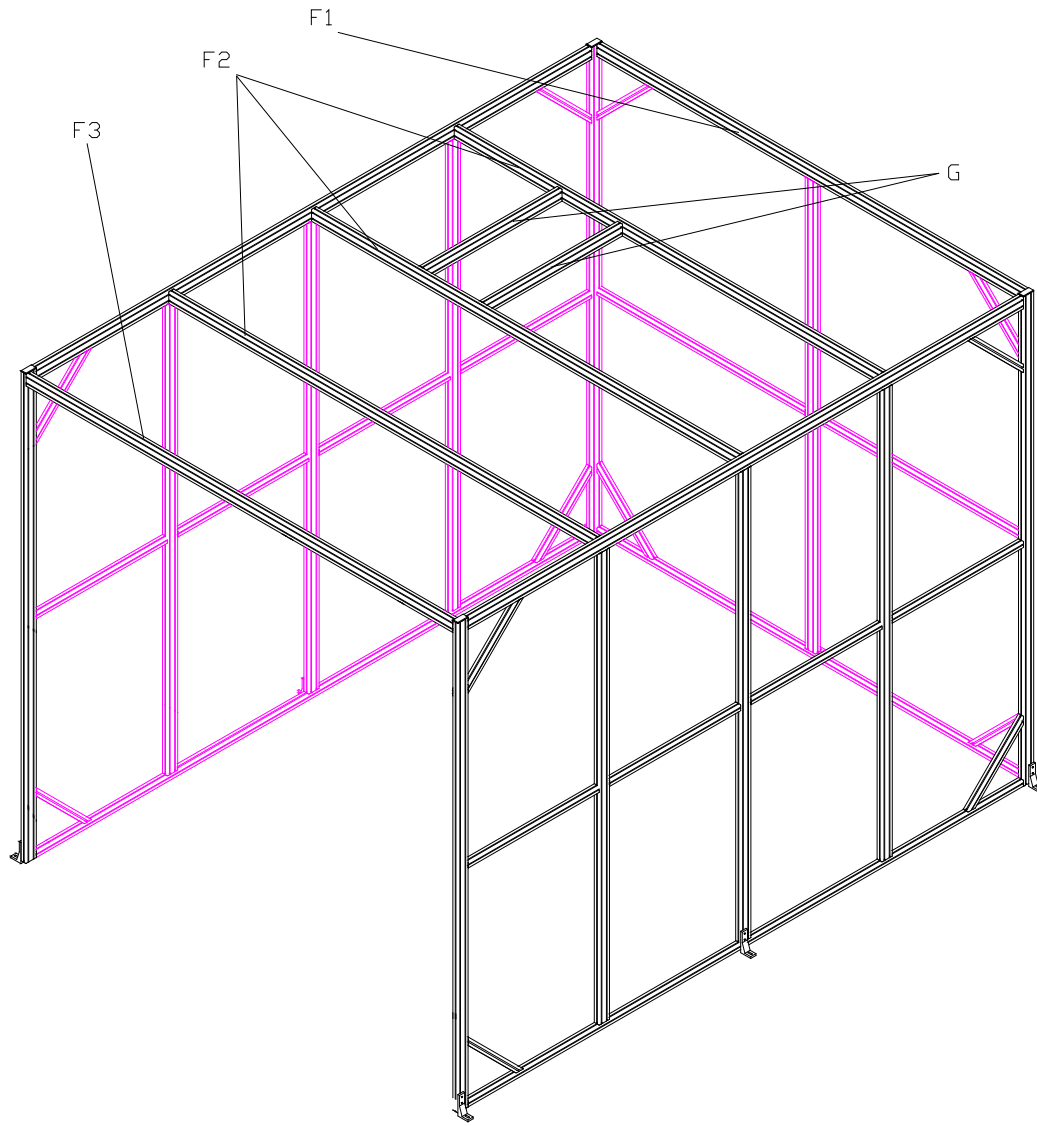


Figure 2-8. IFT Visual Structure Top and Walls

- f) Install the forward most rafter using part F3 and 2 of the “S” type hardware. Ensure 2 of the “S” type hardware are on the bottom side of the rail for attaching the forward wall brace. Refer Figure 2-8.
- g) Between the aft most F2 rails (not the back wall) install both of part G using 8 of the “U” type hardware. Leave this hardware loose until the projector is mounted for final mechanical alignment. Refer Figure 2-8.
- h) Install the forward wall brace using part I and the “U” type hardware attached in step f. Make sure 2 of the “S” hardware are slid into part I for attachment to the remainder of the front wall parts. See Figure 2-9.

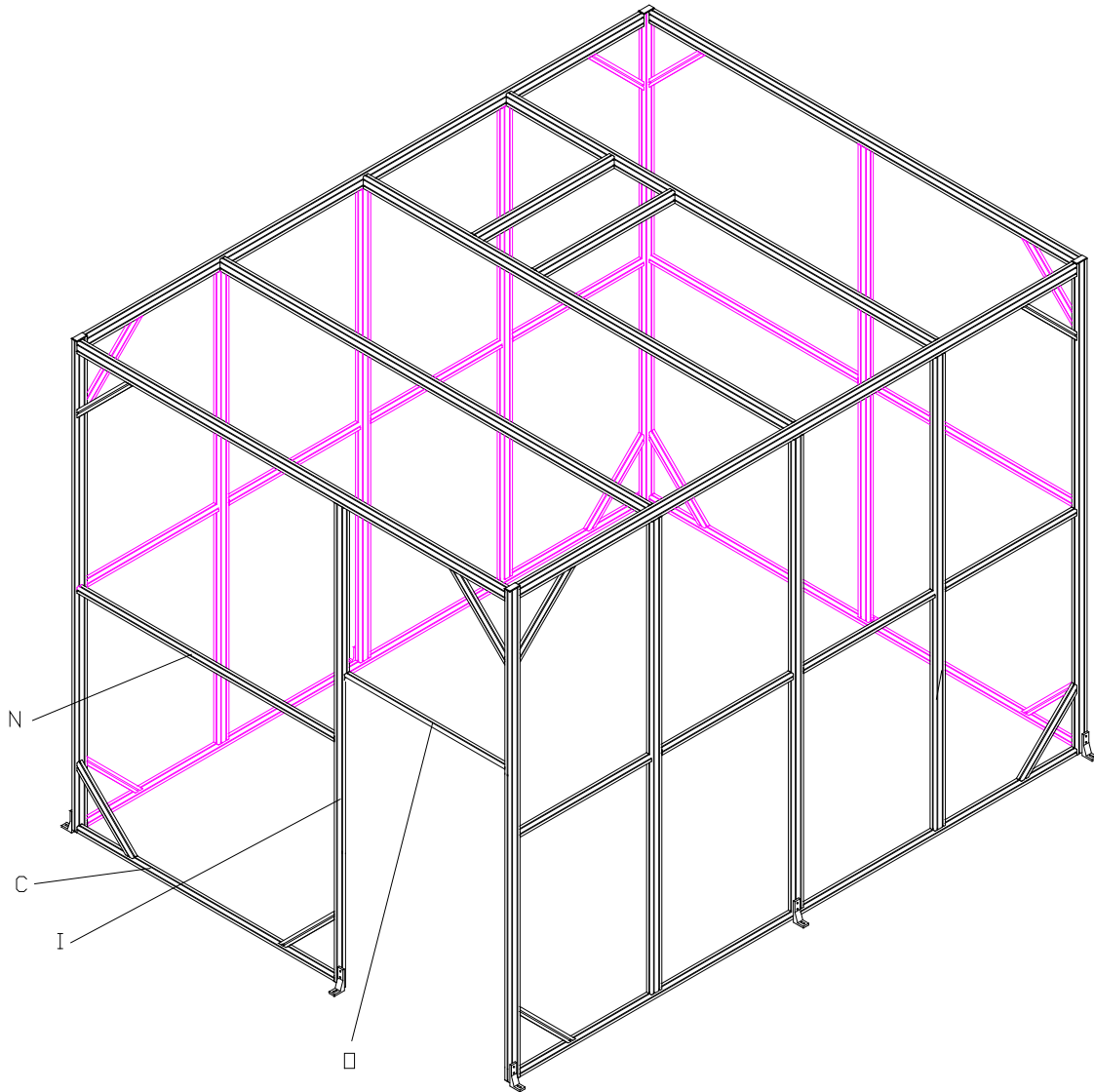


Figure 2-9. IFT Visual Structure Front, Top and Walls

- i) Install part O using 2 of the “U” type hardware. Leave it a bit loose for adjustment when the door is installed. Refer Figure 2-9.
- j) Install parts C and N using the “S” type hardware installed in step h. Refer Figure 2-9.
- k) Tighten everything up ensuring it is all square and plumb. See Figure 2-10.
- l) Install the door 1-inch off the floor surface using the 4 hinges. Use horsehair trim to cover the gap to prevent light leaks.

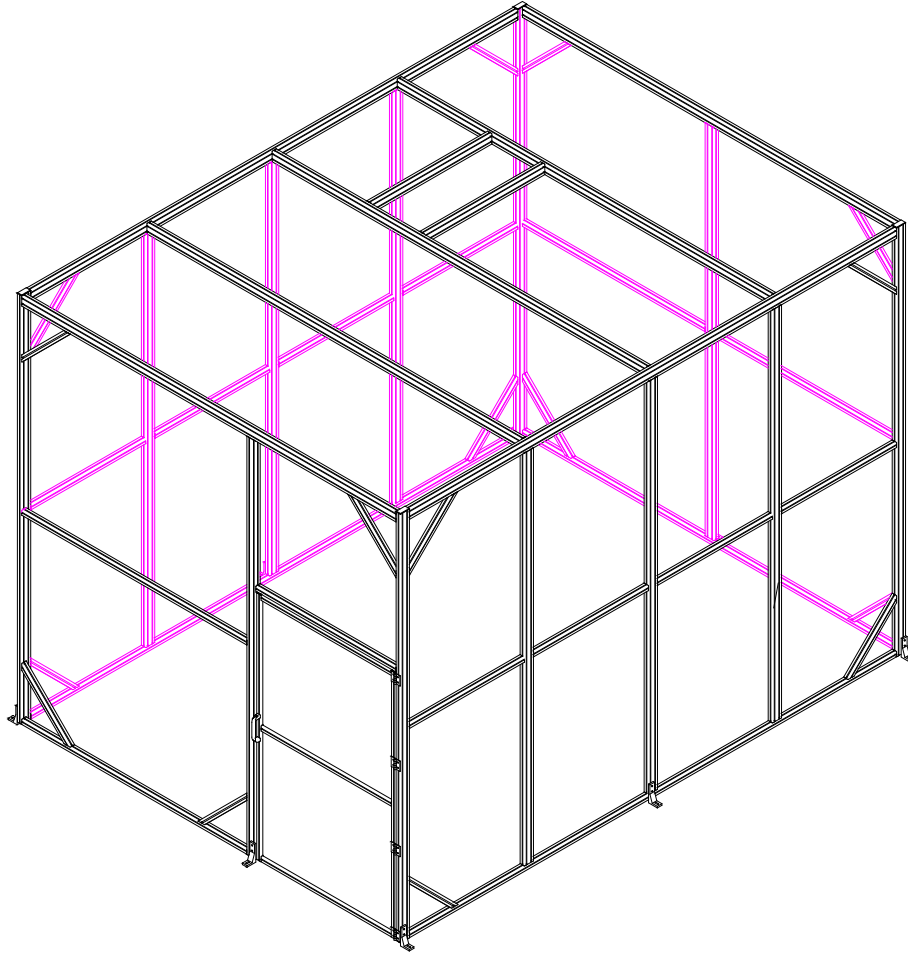


Figure 2-10. IFT Visual Structure Complete

- 13) Install the visual screen on its mounting brackets using the mounting hardware retained in step 5, paragraph 2.3.2.2.1. Reference the IFT Projector/Screen Installation drawing (6520ABC010) for installation specifications of the visual screen.
- 14) Using the self-contained hoist provided on the visual projector mounting bracket and 2-3 people, attach the hoist to the projector lift points and raise the projector to the mounting bracket. Install the visual projector on the mounting bracket securing it with the mounting hardware retained, as described in step 4, paragraph 2.3.2.2. Reference the IFT Projector/Screen Installation drawing (6711ABC010) for installation specifications of the visual projector.
- 15) Install the visual structure ceiling panels.
- 16) In the equipment cabinets, ensure all circuit boards in the Host, IOS, Aural Cue, Flight Deck I/O, and Electrical Control Loading Computers are properly seated.
- 17) Confirm all equipment cabinet components are locked in their respective slide rails or trays and there are no loose components.
- 18) On the student station, ensure the DRI module assembly circuit boards and industry packs are properly seated.

- 19) Confirm all student station components are locked in their respective slide rails or trays and there are no loose components.
- 20) Check all internal cable connections to verify none were disconnected during shipment. Refer to engineering drawings for cable location.
- 21) Confirm that all circuit breakers are in the OFF position.
- 22) Reconnect all external cables, except facility, using the labels and engineering drawings as a guide.
- 23) Place the IOS monitors, keyboard, and mouse in the IOS console and connect all cables using the engineering drawings as a guide.
- 24) Reconnect facility cables using engineering drawings as a guide.
- 25) Install blackout panels.
- 26) To prepare the training device for operation, all subsystems and components must be checked out and powered on. Paragraph 2.6, FTD CHECKOUT, will help ensure each subsystem or component is inspected.

2.3.3. OFT

The OFT consists of a Visual system, Student Station, Instructor Station, and Equipment Cabinets. Prepare the OFT for shipment using the guidelines set forth at the beginning of paragraph 2.3. Use the following procedure as a guide to pack, move, lift, and install the device. **A licensed Operator, qualified in mobile boom crane and forklift operation, is required to move the OFT structures.**

2.3.3.1. Packing the OFT

- 1) Remove the monitors, keyboard, mouse, and all loose and extraneous material from the instructor station. Wrap breakable items appropriately and pack them in shipping containers.
- 2) Remove all loose and extraneous material from the student station. Wrap breakable items appropriately and pack them in shipping containers.
- 3) Secure all components in the student station, instructor station, and equipment cabinets.
- 4) Remove all external cables from the visual system, student station, instructor station, and equipment cabinets. Label them for connection and pack in appropriate shipping containers.

2.3.3.2. Moving the OFT

2.3.3.2.1. Visual Structure

The visual system for the OFT is a wide field-of-view system consisting of seven (Sony) visual projectors mounted on a 270° round dome assembly. Figure 2-11 shows the OFT visual structure. To disassemble the visual structure:

- 1) Remove power to the visual structure lights and fans. Disconnect and remove all external cables.
- 2) Disconnect and remove all external cables from the visual projectors.
- 3) The blackout panels are attached to the visual structure with a hook-and-pile, Velcro™-type of fastener. Remove the blackout panels between the instructor's console and the visual structure and around the outside bottom ring.
- 4) The dome assembly consists of the top cap, on which the visual projectors and other visual components are mounted; the dome structure; and the lower support structure.

CAUTION

**THE PROJECTORS CAN BE
SUCCESSFULLY REMOVED BY ONE
PERSON; HOWEVER, IT IS
RECOMMENDED TWO PERSONS
PERFORM THIS ACTION.**

- 5) The top cap of the visual structure is heavy, approximately 2,500 lbs. with the visual projectors installed. A suitable boom crane must be used to lift and move the top cap. With the visual projectors still installed, attach the boom crane lifting straps to the four lift points, (eight available, if necessary) on the top cap. Remove and retain the hardware securing the top cap to the dome structure. Carefully lift the top cap off the dome assembly and lower it into a suitable shipping container or flat surface for projector removal. If the top cap is to be lifted off without the projectors installed, perform the following steps prior to this one:
 - a) Unlatch the two securing clamps of the projector attachment plate of the projectors.
 - b) Carefully slide the projector clear of the visual structure.
 - c) Repeat the procedure for the remaining projectors.
 - d) Remove and retain the hardware securing the projector to its mounting bracket, if the projectors are not intended to be re-installed.
 - e) After completing these actions, return to the beginning of Step 5 for top cap removal.

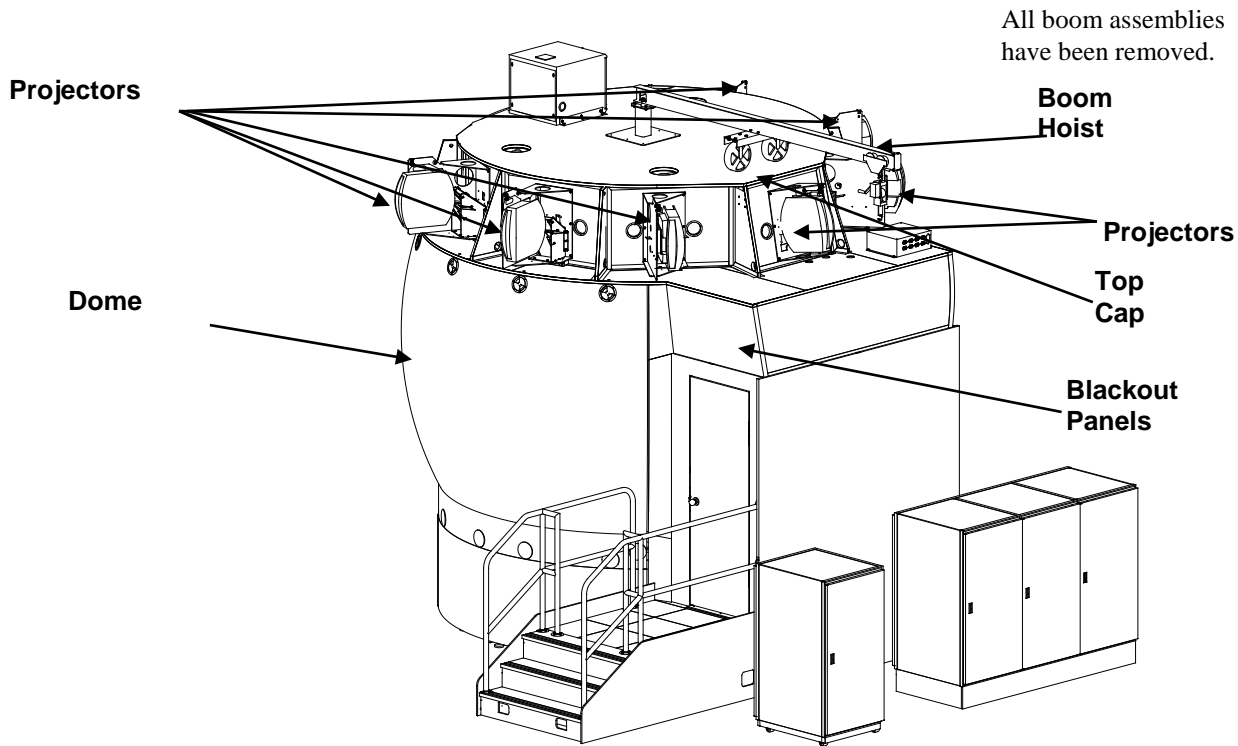


Figure 2-11. OFT Visual Structure

- 6) If the projectors are still installed at this point, remove and retain the hardware securing the projectors to their mounting brackets, then remove the projectors placing them into suitable packing containers.
- 7) The dome is a five-sectioned structure mounted to a ring-support structure. The dome is to be moved in one piece using a crane capable of lifting 1,850lbs.
- 8) Attach the special shipping fixture to the open end of the dome to prevent it from spreading open and warping.
- 9) Remove and retain the hardware securing the dome to the support ring.
- 10) Install four eye bolts into the holes that the top cap was secured to; these will be the lift points for the boom crane to lift and lower the dome onto a suitable bolted shipping skid.
- 11) Remove the floor plates located inside the visual structure around the cockpit. Place in a suitable packing container.
- 12) The support ring is a four-sectioned structure mounted on casters. The ring can be partially or completely disassembled. Unbolt the ring sections and place the sections into a suitable shipping container.

2.3.3.2.2. Instructor Station and Equipment Cabinets

The Instructor Station and Equipment Cabinets of the OFT flight training device are provided with heavy duty, wheeled jack assemblies installed so they can be moved if necessary. These leveling

jacks must be fully raised before the structures can be maneuvered into position for training or shipment. Use steps 1 through 5 of paragraph 2.3.1.2, MOVING THE UTD, as a guide for moving the OFT instructor station and equipment cabinets.

CAUTION

DO NOT MOVE THE FLIGHT TRAINING DEVICE STRUCTURES BY THEIR HANDRAILS. THE HANDRAILS ARE NOT DESIGNED TO BE PULLED OR PUSHED.

CAUTION

DO NOT PLACE THE FLIGHT TRAINING DEVICE STRUCTURES ON AN INCLINED OR UNEVEN SURFACE.

2.3.3.2.3. Student Station

The student station is secured to the floor with four mounting bolts on the frame and four on the seat actuator. Remove and retain the mounting bolts. Secure the seat actuator for shipment.

2.3.3.3. Lifting the OFT

The following provides information about lifting and loading the major structures of the flight training device. Use a forklift capable of lifting approximately 3,000 pounds and have forks spanning the width of the structure.

CAUTION

THE FLIGHT TRAINING DEVICE STRUCTURES MUST BE ON A LEVEL SURFACE BEFORE THE FORKLIFT CAN BE POSITIONED UNDER THE STRUCTURE.

To prevent the forklift from damaging the base frame weldment of the structures, place a piece of wood on top of, and parallel with, each fork.

2.3.3.4. Installing the OFT

Installation and location requirements for the flight training devices are site specific. Refer to the facility installation drawing for site requirements and installation location. Use the following guidelines when installing a flight training device:

LOCATION SELECTION

- The floor must be level, flat, and able to support the full weight of the FTD.
- Accessibility must be adequate on all sides of the structures to allow proper cooling and general maintenance.

- Overhead clearance must be adequate for persons moving within the training device and on top of the visual structure.
- Ensure protection from dust, heat, splash, and drip.

RECEIVING

- Observe all precautions found outside and inside the shipping containers.
- Inspect shipping containers for damage.
- After unpacking, inspect equipment for damage in transit. If damage is found, document according to established procedures.

HANDLING

- Take measures to avoid ESD when handling electronic components. Refer to paragraph 2.2.2, Electrostatic Discharge.
- Use proper and safe methods to move the equipment.
 - 1) Using a forklift, move the student station to the required location in accordance with the facility engineering drawings.
 - 2) When the student station is in the required location, use the cockpit frame as a template to locate and drill the floor mounting holes into the facility floor.
 - 3) Move the student station out of the way, then using the seat actuator as a template, locate and drill the floor mounting holes into the facility floor.
 - 4) Secure the student station to the floor using the hardware retained in paragraph 2.3.3.2.3.
 - 5) Secure the seat actuator to the floor using the hardware retained in paragraph 2.3.3.2.3.
 - 6) Assemble the ring support structure and move it to its required location using the templates provided as necessary. See FSI Drawing 6520ABC005. Level the ring using leveling pads.
 - 7) Move the IOS main structure on its casters to its required location.
 - 8) Move the IOS stair structure on its casters to its required location. Join the stair structure to the main structure and install the securing pins.
 - 9) Move the equipment cabinets on their casters to their required location in accordance with the facility engineering drawings.
 - 10) When they are in the required location, lock casters in place and reinstall trim plates.
 - 11) Install the floor plates connecting the cockpit, and ring support.
 - 12) Using a crane, install the dome structure onto the ring support and secure the dome to the ring.
 - 13) Remove the four eyebolts that were used for the lifting of the dome.
 - 14) Reinstall the visual projectors to the top cap, (if removed for shipping).
 - 15) Attach lifting straps to the lifting points on the top cap of the visual dome and, using a mobile boom crane, lift it and install it on top of the dome structure.

- 16) Ensure all bolts and hardware securing the ring structure sections, dome structure sections, and top cap have been tightened securely.
- 17) Carefully lift the projector, guide the projector to its mounting bracket, and secure the projector to its mounting bracket using the hardware retained, as described in step 5 of paragraph 2.3.3.2.1.
- 18) Repeat the previous step for each of the remaining six projectors.
- 19) In the equipment cabinets, ensure all circuit boards in the Host, IOS, Aural Cue, Flight Deck I/O, and Electrical Control Loading Computers are properly seated.
- 20) Confirm all equipment cabinet components are locked in their respective slide rails or trays and there are no loose components.
- 21) On the student station, ensure the DRI module assembly circuit boards and industry packs are properly seated.
- 22) Confirm all student station components are locked in their respective slide rails or trays and there are no loose components.
- 23) Check all internal cable connections to verify none were disconnected during shipment. Refer to engineering drawings for cable location.
- 24) Confirm that all circuit breakers are in the OFF position.
- 25) Reconnect all external cables, except facility, using the labels and engineering drawings as a guide.
- 26) Install instructor-cockpit floor plate.
- 27) Place the IOS monitors, keyboard, and mouse in the IOS console and connect all cables using the engineering drawings as a guide.
- 28) Install all blackout curtains.
- 29) Reconnect facility cables using engineering drawings as a guide.
- 30) To prepare the training device for operation, all subsystems and components must be checked out and powered on. Paragraph 2.6, FTD CHECKOUT, will help ensure each subsystem or component is inspected.

2.4. INITIAL CONFIGURATION AND ADJUSTMENTS

The FTD contains subsystems and components that must be properly configured before initially powering up or installing new components. These subsystems or components include host computer, Instructor Operating System, Aural Cue System (or Audio Processing System), communication system, Electric Control Loading System, and Flight Deck I/O System. Configuring boot parameters and environmental variables for each subsystem can be found in Section 5 of this manual.

2.4.1. Host Computer

The Host Computer contains components that must be configured prior to initial power-up. These components include a hard disk drive and a PCI bus single board computer card assembly. Other components reside in the host computer chassis; however, they are factory set and require no further configuration.

2.4.1.1. Hard Disk Drive

Figure 2-12 illustrates the jumper/shunt configuration of the hard disk drive in the host computer. The illustration should only be used as a guide. A replacement drive may not be from the same manufacturer; therefore, the configuration may be different. Prior to installing a replacement hard disk drive, ensure that it is configured for the master or single-drive operation. Use the vendor information shipped with the drive to configure the drive for master or single drive operation.

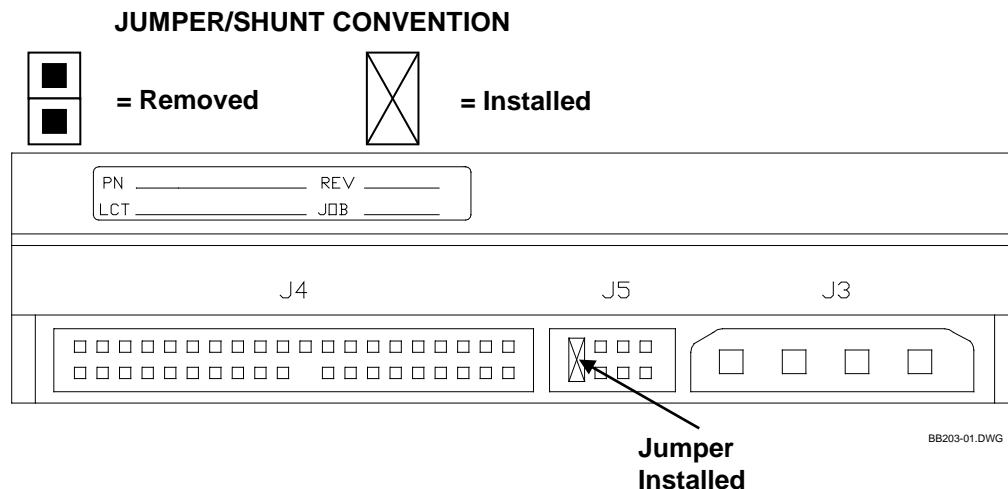


Figure 2-12. Host Computer Hard Disk Drive Configuration

2.4.1.2. PCI Bus Single Board Computer Card Assembly

Figure 2-13 illustrates the jumper/shunt configuration of the PCI Bus Single Board Computer Card Assembly in the host computer. Figure 2-14 describes the configuration settings for the card assembly.

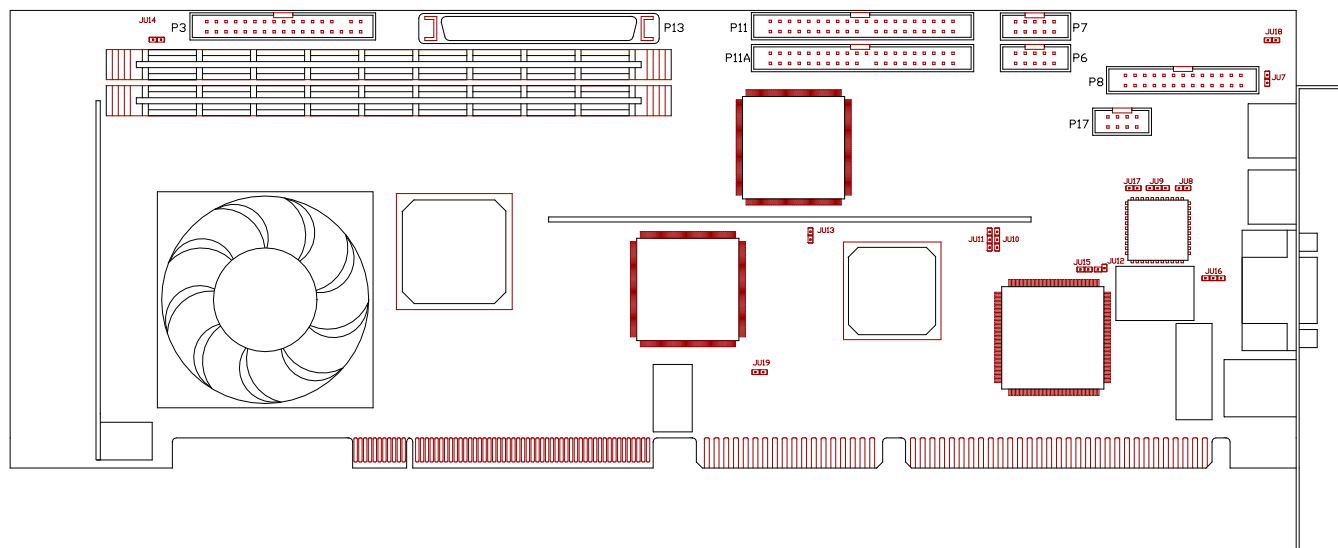















Figure 2-13. Host Computer PCI Bus Single Board Computer Card Assembly Configuration

CARD JUMPERS

REFERENCE DESIGNATOR	DESCRIPTION	-501																																			
JU7	COMBO I/O (P5A) SPEAKER CONNECT (ALSO REFER TO JU18 - COMBO I/O RESET CONNECT.) INSTALL TO CONNECT SPEAKER DATA SIGNAL TO PIN 8 OF THE COMBO I/O CONNECTOR (P5A). REMOVE TO DISCONNECT.	 JU7																																			
JU8	PASSWORD CLEAR INSTALL FOR ONE POWER-UP CYCLE TO RESET THE PASSWORD TO THE DEFAULT (NULL PASSWORD). REMOVE FOR NORMAL OPERATION.	 JU8																																			
JU9	CRT TYPE SELECT INSTALL ON THE LEFT FOR A MONOCHROME CRT. INSTALL ON THE RIGHT FOR A COLOR CRT.	 JU9																																			
JU10/JU11	SYSTEM FLASH ROM OPERATIONAL MODES THE FLASH ROM HAS TWO PROGRAMMABLE SECTIONS: THE BOOT BLOCK FOR "FLASHING" IN THE BIOS AND THE MAIN BLOCK FOR THE EXECUTABLE BIOS AND PnP PARAMETERS. NORMALLY ONLY THE MAIN BLOCK IS UPDATED WHEN A NEW BIOS IS FLASHED INTO THE SYSTEM. <table><tr><td>PROGRAM ALL (BOOT AND MAIN)</td><td>JU10 BOTTOM</td><td>JU11 BOTTOM</td></tr><tr><td>NORMAL PnP AND PROGRAM MAIN BLOCK</td><td>JU10 BOTTOM</td><td>JU11 TOP</td></tr><tr><td>WRITE PROTECT</td><td>JU10 TOP</td><td>JU11 TOP</td></tr></table>	PROGRAM ALL (BOOT AND MAIN)	JU10 BOTTOM	JU11 BOTTOM	NORMAL PnP AND PROGRAM MAIN BLOCK	JU10 BOTTOM	JU11 TOP	WRITE PROTECT	JU10 TOP	JU11 TOP	 JU10 JU11																										
PROGRAM ALL (BOOT AND MAIN)	JU10 BOTTOM	JU11 BOTTOM																																			
NORMAL PnP AND PROGRAM MAIN BLOCK	JU10 BOTTOM	JU11 TOP																																			
WRITE PROTECT	JU10 TOP	JU11 TOP																																			
JU12	CMOS CLEAR INSTALL TO CLEAR. REMOVE TO OPERATE.	 JU12																																			
JU13	SCSI TERMINATION ENABLE INSTALL TO DISABLE ON-BOARD ACTIVE TERMINATION FOR THE SCSI INTERFACE. REMOVE TO ENABLE ACTIVE TERMINATION.	 JU13																																			
JU14	FAN SPEED MONITOR THIS JUMPER MUST BE REMOVED (DISABLED).	 JU14																																			
JU15	3.3V MONITOR ENABLE INSTALL TO ENABLE THE 3.3V MONITOR. REMOVE TO DISABLE THE MONITOR.	 JU15																																			
JU16	WATCHDOG TIMER INSTALL ON THE LEFT FOR NORMAL RESET OPERATION. INSTALL ON THE RIGHT TO ENABLE WATCHDOG TIMER OPERATION.	 JU16																																			
JU17	INTERRUPT 12 (IRQ12) SELECT INSTALL TO DEDICATE IRQ12 TO THE PS/2 MOUSE. REMOVE TO MAKE IRQ12 AVAILABLE FOR SYSTEM USE.	 JU17																																			
JU18	COMBO I/O (P5A) RESET CONNECT (ALSO REFER TO JU7-COMBO I/O SPEAKER CONNECT.) INSTALL TO CONNECT RESET DATA SIGNAL TO PIN 1 OF THE COMBO I/O CONNECTOR (P5A). REMOVE TO DISCONNECT.	 JU18																																			
JU19	SCSI ACTIVITY LED ENABLE INSTALL TO LIGHT THE HARD DRIVE LED FOR SCSI DRIVE ACTIVITY. REMOVE IF YOU DO NOT HAVE A SCSI DRIVE (i.e., THE SCSI CONTROLLER IS NOT BEING USED).	 JU19																																			
W3,W5,W6	CPU SPEED JUMPERS THESE THREE JUMPERS MUST BE SET CORRECTLY TO ALLOW THE SBC TO TAKE FULL ADVANTAGE OF THE SPEED OF THE PENTIUM CPU. THESE JUMPERS MUST BE SET AS SPECIFIED BELOW. <table><tr><th>CPU SPEED</th><th>SYNTHESIZER FREQUENCY</th><th>W3</th><th>W6</th><th>W5</th></tr><tr><td>450MHz</td><td>100MHz</td><td>OUT</td><td>IN</td><td>OUT</td></tr><tr><td>400MHz</td><td>100MHz</td><td>IN</td><td>IN</td><td>OUT</td></tr><tr><td>350MHz</td><td>100MHz</td><td>OUT</td><td>OUT</td><td>IN</td></tr><tr><td>333MHz</td><td>66MHz</td><td>IN</td><td>OUT</td><td>OUT</td></tr><tr><td>300MHz</td><td>66MHz</td><td>OUT</td><td>IN</td><td>OUT</td></tr><tr><td>266MHz</td><td>66MHz</td><td>IN</td><td>IN</td><td>OUT</td></tr></table>	CPU SPEED	SYNTHESIZER FREQUENCY	W3	W6	W5	450MHz	100MHz	OUT	IN	OUT	400MHz	100MHz	IN	IN	OUT	350MHz	100MHz	OUT	OUT	IN	333MHz	66MHz	IN	OUT	OUT	300MHz	66MHz	OUT	IN	OUT	266MHz	66MHz	IN	IN	OUT	 W5 W6 W3
CPU SPEED	SYNTHESIZER FREQUENCY	W3	W6	W5																																	
450MHz	100MHz	OUT	IN	OUT																																	
400MHz	100MHz	IN	IN	OUT																																	
350MHz	100MHz	OUT	OUT	IN																																	
333MHz	66MHz	IN	OUT	OUT																																	
300MHz	66MHz	OUT	IN	OUT																																	
266MHz	66MHz	IN	IN	OUT																																	

JUMPER / SHUNT CONVENTION

NOT
INSTALLED

INSTALLED

Figure 2-14. Host Computer PCI Bus Card Assembly Jumper Description

2.4.2. APS Sound System

The APS Sound System components must be properly configured before initially powering up or installing them. These components are the Sound System computer and the Audio Processing System.

2.4.2.1. Sound System Computer

Configure the Sound System computer in accordance with engineering drawing 60001ABB205-501, Sound Subsystem Assembly prior to initial power-up. The add-in components include a PCI Sound Card and a PCI MegaRAID SCSI card. Other components reside in the host computer chassis; however, they are factory set and require no further configuration. See Figure 2-15. Also, configure the Sound System Computer in accordance with engineering drawing 60001ABB210-506, Subsystem Software Configuration.

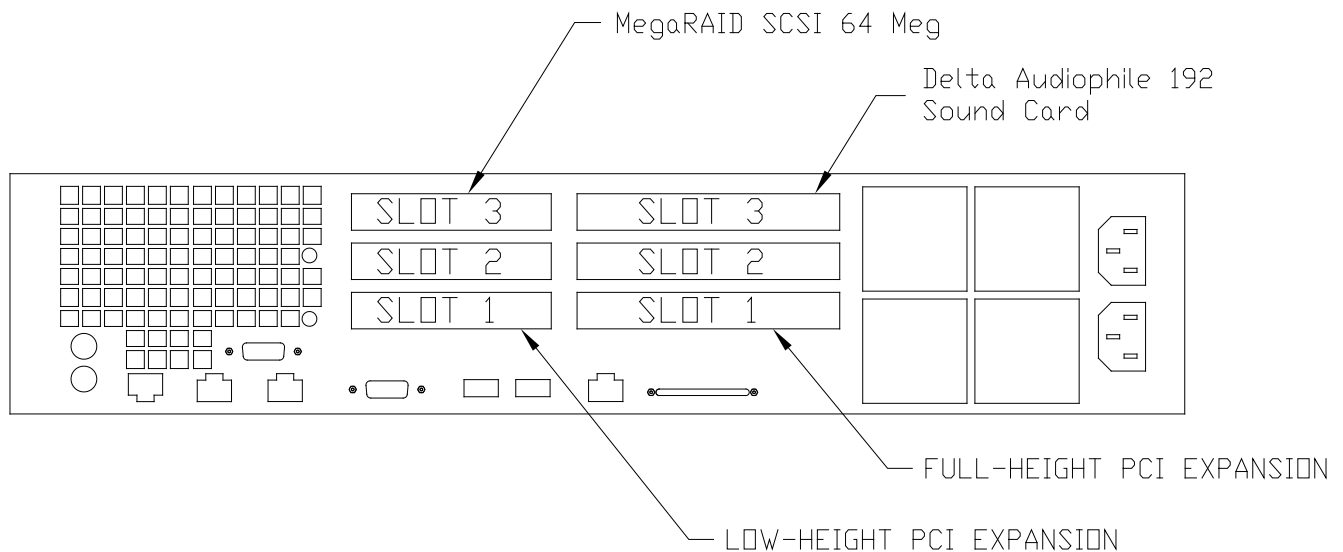


Figure 2-15. Host Computer PCI Bus Card Assembly Jumper Description

2.4.2.1. Sound System Computer Setup

The following is how to install the runtime SND/COM (SimSound.exe and SimComm.exe) files on a Sound System Computer (Computer Assy 60001ABB205-501). This system is designed to use the existing JPATS host computer and audio interfaces.

It does not provide a development environment.

2.4.2.1.1. Software Install

- 1) Login to Windows using user+sndadmin, pw+sndadmin
(This admin profile must be provided as part of the SSD D68 initial Windows Installation required for the 60001ABB205-501 assembly. It also provides all required licensing.)
- 2) Install JPATS Sound SIMDATA Install CD and run its Install.exe. Use all default prompt responses. This is a runtime environment only.
- 3) Verify the existing System Environment Variable PATH: C:\SIMDATA\SND\bin.

2.4.2.1.2. Setup

- 1) One L3-Com, Inc. Audio Processor System (APS) VID 57020BA0002-001 is connected to the sound PC and the host computer Ethernet port that is assigned to the sound subsystem PC. The APS should connect to existing simulator audio plugs with adapter cable assembly 6520ABN003-501.
- 2) The Sound PC (reference information on 6520ABN200-502) should have two network interface controllers (NICs) configured as shown below. The primary NIC should be connected to the host's sound port as **10.10.1.2** using CAT5 "Crossover" cable. Connect the second NIC as **100.100.100.1** to the APS using a CAT5 "Crossover" cable. See Figure 2-16.
- 3) Logout of Windows and log back in as 'snd', password = 'snd'.
- 4) Verify the APS console jack (RS232 on the back of the unit) is connected to the Sound PC RS232 COM1 serial port using cable assembly 6520ABN004-501. The APS defaults to 9600 baud/No Parity/8 data bits/1 stop bit protocol.

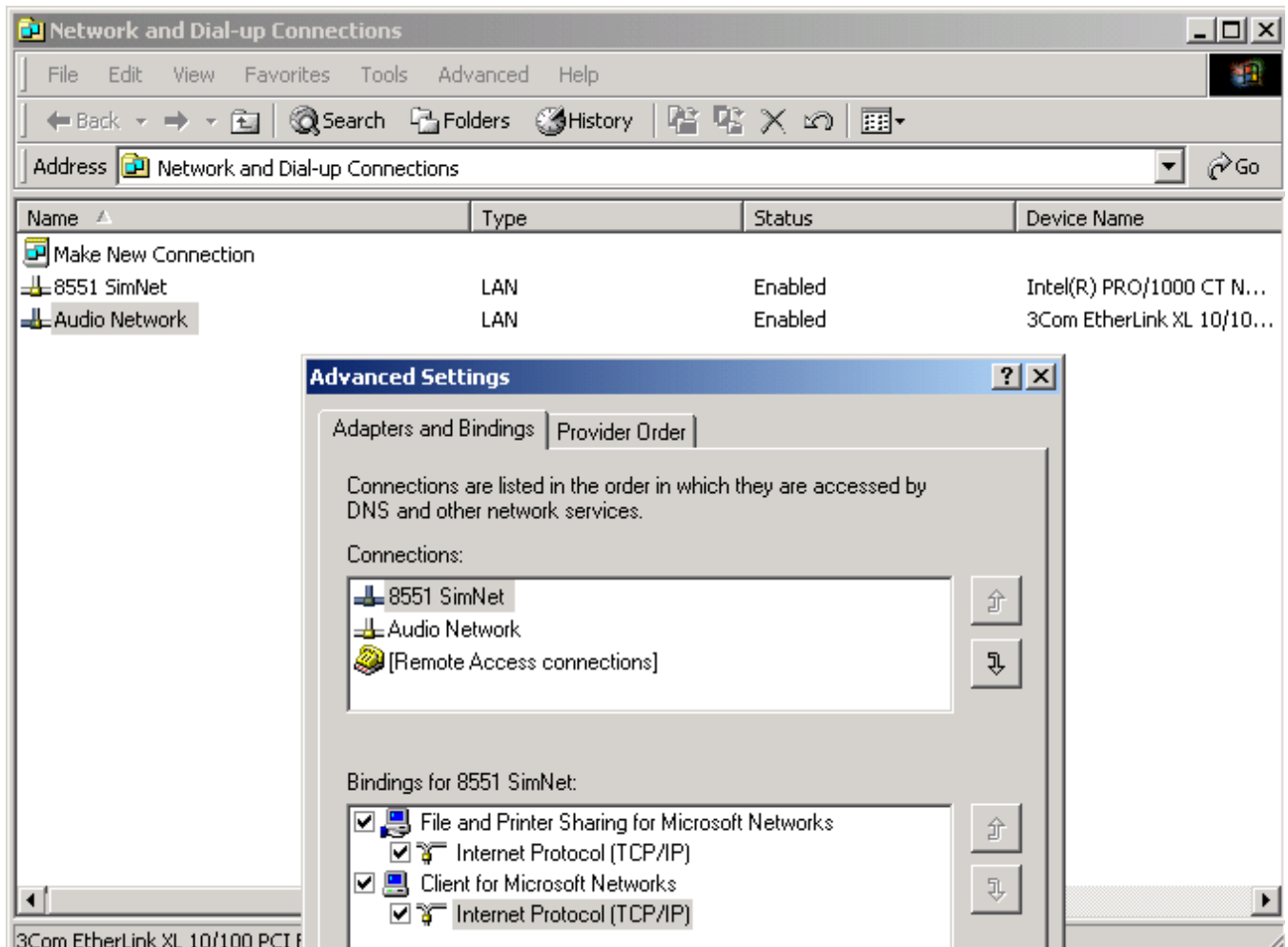


Figure 2-16. Network Setup

- 5) Using the APS Console desktop shortcut, open the console window and enter the following APS VxWorks parameters. Interrupt the continuous boot process by hitting any key at the prompt and configure as follows.

NOTE

- Typing CTRL-X on the console forces a reboot if the unit is halted.
- When the APS is rebooted all front panel LED's briefly illuminate.

APS-boot.c (to change parameters, or 'p' to display them)

```
boot device:          ibmEmac0
processor number:     0
host name:            sndJPAT
file name:            apsWorks
inet on ethernet (e): 100.100.100.2
inet on backplane (b):
host inet (h):        100.100.100.1
gateway inet (g):
user (u):             snd
ftp password (pw) (blank = user rsh): snd
flags (f):            0x8
target name (tn):     apsJPAT
startup script (s):
other (o):
```

- 6) Run C:\SIMDATA\SND\net\ftpsrvr.exe. See Figure 2-17.

Click 'Show configuration' and select all 3 "Startup Settings" checkboxes as shown in Figure 2-17.

Click the green Start button to initially start ftpserver. It will start automatically at reboot from now on.

Minimize the ftpserver.exe window.

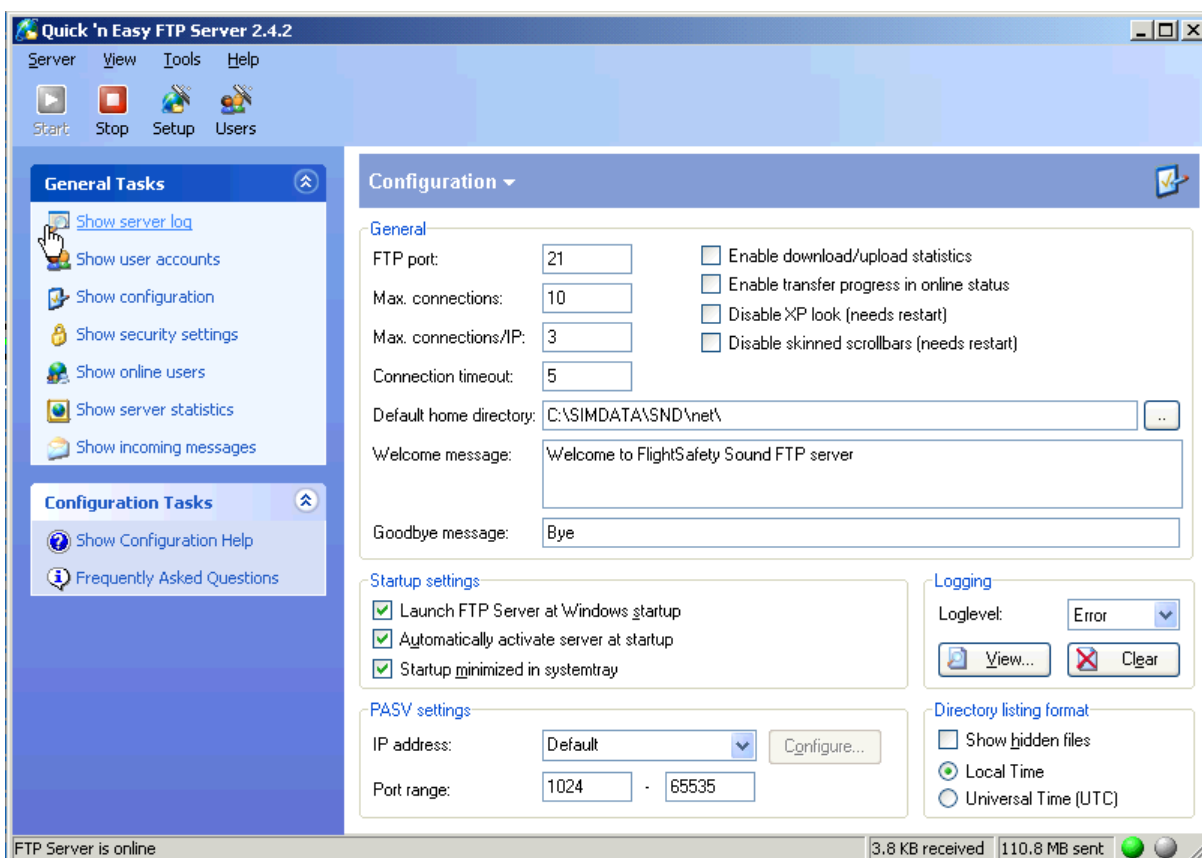


Figure 2-17. FTP Server Setup

- 7) Using the APS console desktop shortcut (or existing Terminal in task bar), type **CTRL-X** to reboot the APS unit and verify the apsWorks file is loaded and the unit boots completely. The APS console can be used to monitor for the following final lines.

```
0x3fffd8 (tRootTask):  apsVerifyChecksum: checksums OK
0x3fffd8 (tRootTask):  apsVerifyChecksum: checksums OK
AP firmware started!
AP:                    main
SP:                    firmware Started!
gethostname:           'apsJPAT'
```

2.4.2.1.3. Software Setup

- 1) Setup Windows 'AutoAdminLogon' to prevent login prompts:

Start regedit and locate this subkey:

\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\WindowsNT\CurrentVersion\Winlogon

Set the following variables: (if not shown use edit->new string to create)

DefaultUserName = snd

DefaultPassword = snd

AutoAdminLogon = 1

- 2) Cold re-start the PC and verify the auto_login as snd, ftp server, startup shortcuts, and resulting SimSound and SimComm windows are present and the JPATS_hostif.exe exists in the system tray as shown in Figure 2-18.

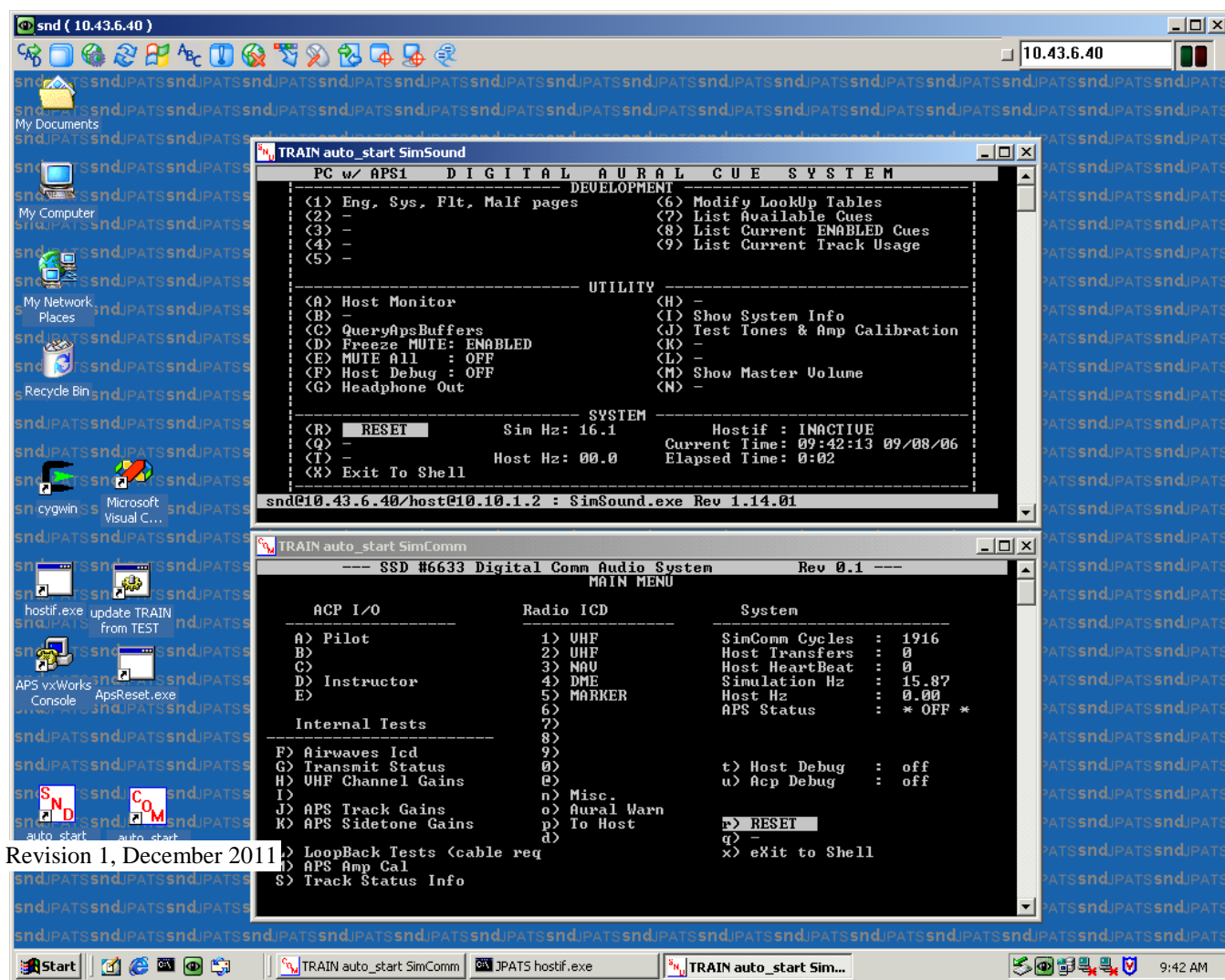


Figure 2-18. FTP Server Setup

2.4.2.2. Audio Processing System (APS) Unit

The Audio Processing System unit is a stand-alone system manufactured by Titan. Before installing a new unit, make sure the CHASSIS-AGND switch on the back of the unit is set to DIRECT. See Figure 2-19.



Figure 2-19. FTP Server Setup

2.4.2.2.1. Configuring the APS Boot Parameters

If the APS Unit is removed or replaced, the boot parameters should be verified for proper operation of the ACS system. The APS uses VxWorks for its internal real-time operating system. The following steps and Table 2-1, instruct the user on verification of the needed parameters.

Table 2-1. APS Boot Parameters

Set APS vxWorks Parameters using its serial port (Console #5)	
boot device:	ibmEmac0
processor number:	0
host name:	SndJPAT
file name:	apsWorks
inet on ethernet (e):	100.100.100.2
inet on backplane (b):	
host inet (h):	100.100.100.1
gateway inet (g):	
user (u):	snd
ftp password (pw)(blank =use rsh):	snd
snd flags (f):	0x8
target name (tn):	apsJPAT
startup script (s):	
other (o):	
APS-boot>	

NOTE

The APS boot parameters can be entered from the Instructor Operators Station or the System Console by accessing the Sound PC.

IOS or System Console Terminal:

- 1) Press **NumLock** twice in quick succession, select **ACS Computer** using the arrow keys, then press **<Enter>**.
- 2) At the computer desktop, find the APS Console Page. If the APS Console page is not displayed, click on the APS Console icon on the Computer desktop.
- 3) Enter **^X** (Control X).
- 4) The VxWorks prompt will appear. Enter **^P** (Control P) and verify the parameters with Table 2-1. If the parameters are correct, press the **<Enter>** key. If the parameters are not correct, press the 'c' key and enter the correct parameter, then press the **<Enter>** key.
- 5) Continue verifying all parameters.
- 6) After the parameters are verified, press the **<enter>** key. The new values will be saved and the **—>** prompt will appear.
- 7) Type the '@' key and verify that the ACS boots properly.

2.4.3. Electric Control Loading System (ECLS)

The ECLS consists of an ECL computer assembly that resides in the equipment cabinets, two Digital Remote Interface (DRI) platform assemblies, a patch panel, a power supply, and servo amplifiers, (5 in the UTD and 6 in the IFT and OFT each) that reside in the cockpit frame. For ECL systems with DAS, the main differences in configuration and operation are the DAS platform (which takes over DRI functions) resides in the equipment cabinet 9A3 and the two DRI platform assemblies no longer exist. DAS II is similar to DAS. Use the following paragraphs as a guide to configure the ECLS components. DRI information starts at 2.4.4.2; DAS at 2.4.4.4. DAS II is addressed in a separate supplement.

2.4.3.1. ECL Computer Assembly

The computer assembly contains components that must be configured prior to initial power-up. These components include a hard disk drive, IP Carrier Card Assembly (consisting of the carrier card and an IP module), and a PCI bus single-board computer card assembly. Other components reside in the computer chassis; however, they are factory set and require no further configuration.

2.4.3.1.1. Hard Disk Drive

Figure 2-20 illustrates the jumper/shunt configuration of the hard disk drive in the ECLS computer. The illustration should only be used as a guide. A replacement drive may not be from the same manufacturer; therefore, the configuration may not be the same. Prior to installing a replacement hard disk drive, ensure it is configured for the master or single drive operation. Use the vendor information shipped with the drive to configure the drive for master or single drive operation.

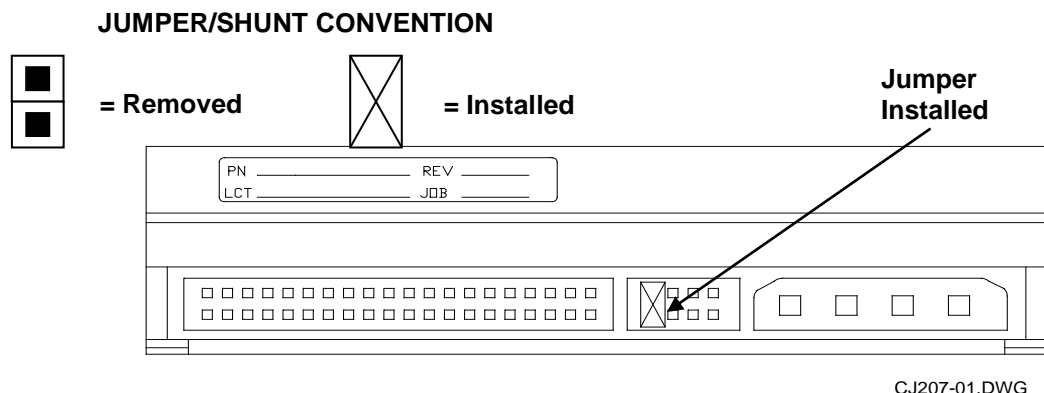


Figure 2-20. ECLS Computer Hard Disk Drive Configuration

2.4.3.1.2. IP Carrier Card Assembly

The IP Carrier Card assembly consists of a 6-slot industry pack (IP) carrier circuit card with application specific IP modules installed on it. In the ECLS, a fiber optic interface IP module is installed in slots E and F on the carrier. Figure 2-21 illustrates the jumper/shunt configuration of the IP Carrier Card Assembly in the ECLS computer.

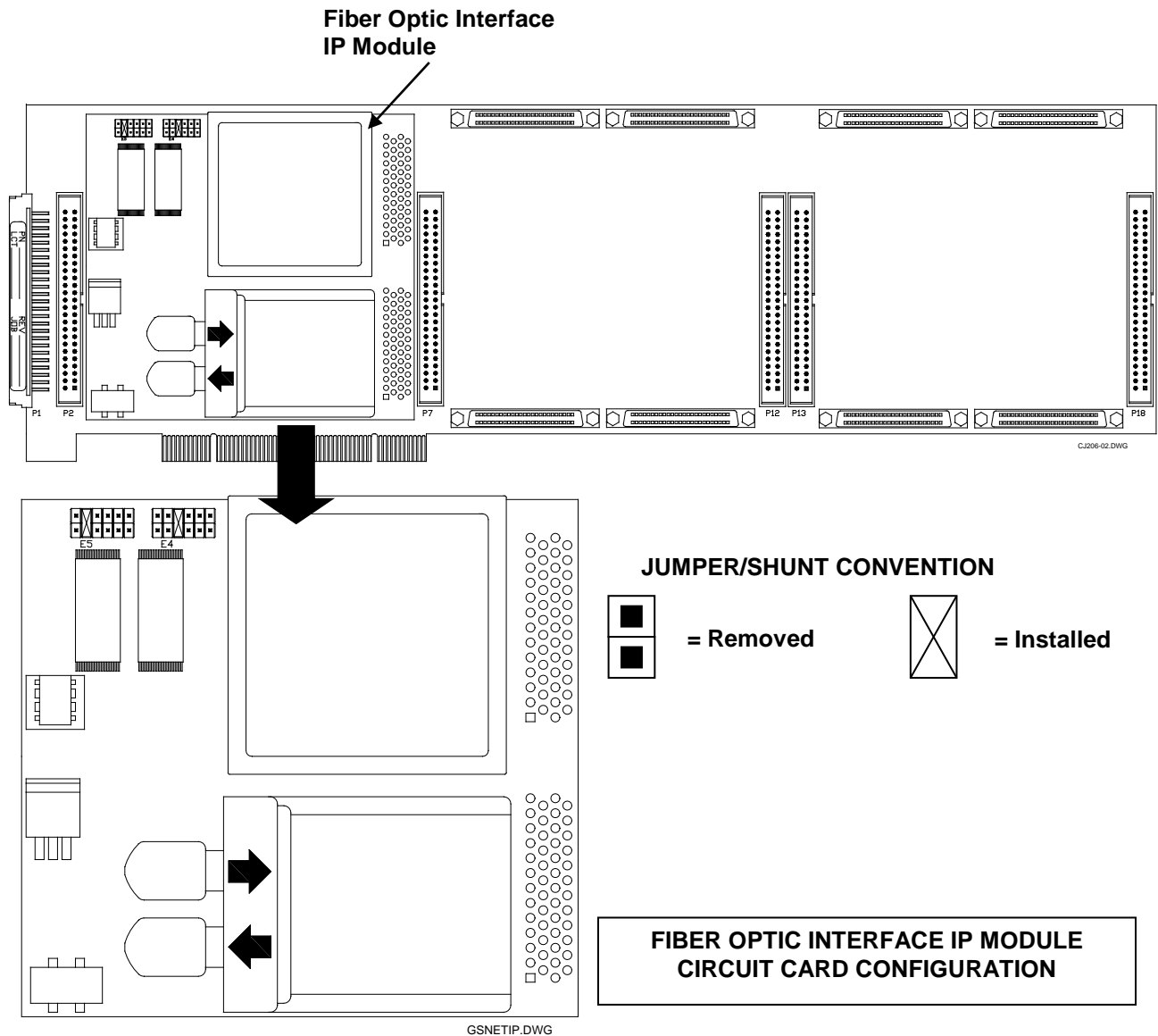


Figure 2-21. ECL System IP Carrier/Fiber Optic Interface IP Module Configuration

2.4.3.1.3. PCI Bus Single Board Computer Card Assembly

Figure 2-22 illustrates the jumper/shunt configuration of the PCI Bus Single-Board Computer Card Assembly in the ECLS Computer. Figure 2-23 describes the configuration settings for the card assembly.

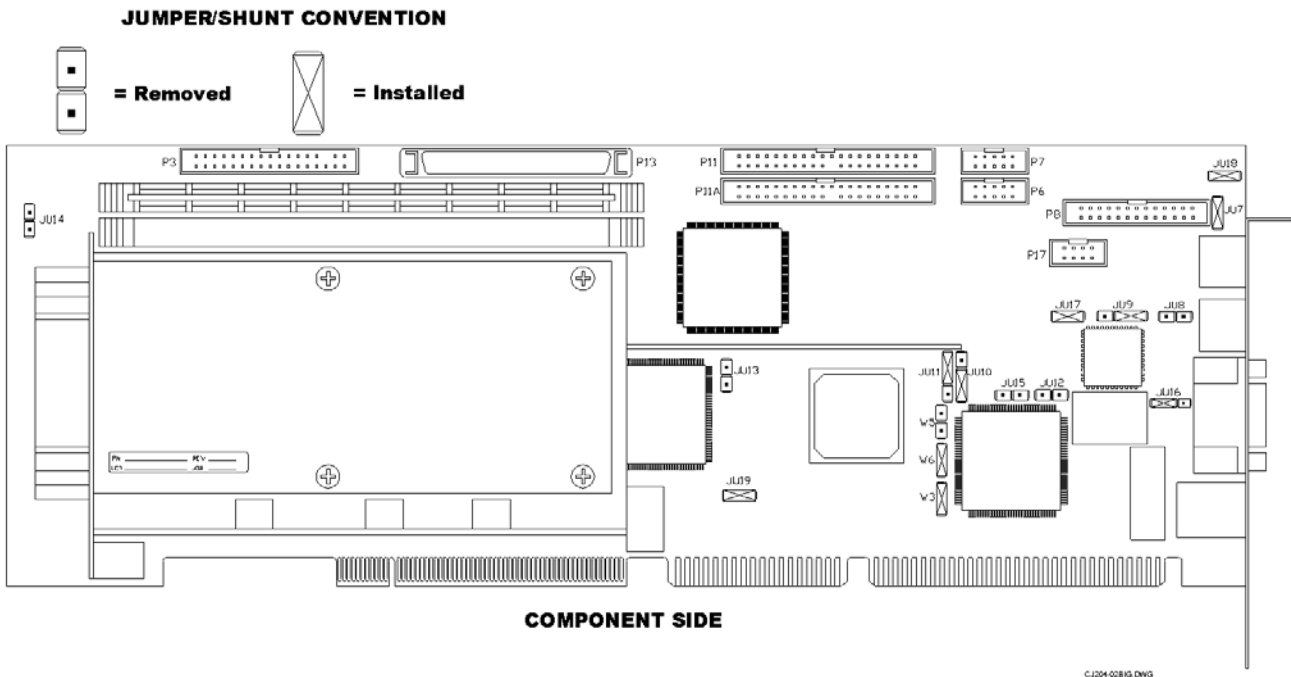

















Figure 2-22. ECLS Computer PCI Bus Single-Board Computer Card Assembly Configuration

CARD JUMPERS

REFERENCE DESIGNATOR	DESCRIPTION	-501
JU7	COMBO I/O (PSA) SPEAKER CONNECT (ALSO REFER TO JU18 - COMBO I/O RESET CONNECT.) INSTALL TO CONNECT SPEAKER DATA SIGNAL TO PIN 8 OF THE COMBO I/O CONNECTOR (PSA). REMOVE TO DISCONNECT.	 JU7
JU8	PASSWORD CLEAR INSTALL FOR ONE POWER-UP CYCLE TO RESET THE PASSWORD TO THE DEFAULT (NULL PASSWORD). REMOVE FOR NORMAL OPERATION.	 JU8
JU9	CRT TYPE SELECT INSTALL ON THE LEFT FOR A MONOCHROME CRT. INSTALL ON THE RIGHT FOR A COLOR CRT.	 JU9
JU10/JU11	SYSTEM FLASH ROM OPERATIONAL MODES THE FLASH ROM HAS TWO PROGRAMMABLE SECTIONS: THE BOOT BLOCK FOR 'FLASHING' IN THE BIOS AND THE MAIN BLOCK FOR THE EXECUTABLE BIOS AND PnP PARAMETERS. NORMALLY ONLY THE MAIN BLOCK IS UPDATED WHEN A NEW BIOS IS FLASHED INTO THE SYSTEM. <div style="display: flex; justify-content: space-around;"> <div> PROGRAM ALL (BOOT AND MAIN) NORMAL PnP AND PROGRAM MAIN BLOCK WRITE PROTECT </div> <div> <div>JU10 JU11</div> <div>BOTTOM BOTTOM</div> <div>BOTTOM TOP</div> <div>TOP TOP</div> </div> </div>	 JU11 JU10
JU12	CMOS CLEAR INSTALL TO CLEAR. REMOVE TO OPERATE.	 JU12
JU13	SCSI TERMINATION ENABLE INSTALL TO DISABLE ON-BOARD ACTIVE TERMINATION FOR THE SCSI INTERFACE. REMOVE TO ENABLE ACTIVE TERMINATION.	 JU13
JU14	FAN SPEED MONITOR THIS JUMPER MUST BE REMOVED (DISABLED).	 JU14
JU15	3.3V MONITOR ENABLE INSTALL TO ENABLE THE 3.3V MONITOR. REMOVE TO DISABLE THE MONITOR.	 JU15
JU16	WATCHDOG TIMER INSTALL ON THE LEFT FOR NORMAL RESET OPERATION. INSTALL ON THE RIGHT TO ENABLE WATCHDOG TIMER OPERATION.	 JU16
JU17	INTERRUPT 12 (IRQ12) SELECT INSTALL TO DEDICATE IRQ12 TO THE PS/2 MOUSE. REMOVE TO MAKE IRQ12 AVAILABLE FOR SYSTEM USE.	 JU17
JU18	COMBO I/O (PSA) RESET CONNECT (ALSO REFER TO JU7-COMBO I/O SPEAKER CONNECT.) INSTALL TO CONNECT RESET DATA SIGNAL TO PIN 1 OF THE COMBO I/O CONNECTOR (PSA). REMOVE TO DISCONNECT.	 JU18
JU19	SCSI ACTIVITY LED ENABLE INSTALL TO LIGHT THE HARD DRIVE LED FOR SCSI DRIVE ACTIVITY. REMOVE IF YOU DO NOT HAVE A SCSI DRIVE (i.e., THE SCSI CONTROLLER IS NOT BEING USED).	 JU19
W3,W5,W6	CPU SPEED JUMPERS THESE THREE JUMPERS MUST BE SET CORRECTLY TO ALLOW THE SBC TO TAKE FULL ADVANTAGE OF THE SPEED OF THE PENTIUM CPU. THESE JUMPERS MUST BE SET AS SPECIFIED BELOW. <div style="display: flex; justify-content: space-around;"> <div> CPU SPEED </div> <div> SYNTHESIZER FREQUENCY </div> <div> W3 W6 W5 </div> </div> <div style="display: flex; justify-content: space-around;"> <div> 450MHz 100MHz OUT IN OUT 400MHz 100MHz IN IN OUT 350MHz 100MHz OUT OUT IN 333MHz 66MHz IN OUT OUT 300MHz 66MHz OUT IN OUT 266MHz 66MHz IN IN OUT </div> <div>  W5  W6  W3 </div> </div>	

c:\204big.dwg

Figure 2-23. ECLS Computer PCI Bus Card Assembly Jumper Descriptions

2.4.3.2. DRI Platform Assemblies

There are two DRI Platform Assemblies in the ECLS; Controls DRI CLS-1 and Utility DRI UTL-1. The DRI Platform Assembly consists of two circuit boards mounted back-to-back and are mounted in slide out frames on the cockpit frame. The DRI Platform Assemblies consist of the following boards.

- Platform332 Board IP Modules
- Platform332 Board w/ IP-GSnet board
- Power Supply and Signal Conditioning Board (PSSCB)

The circuit boards in each DRI Platform Assembly must be properly configured.

2.4.3.2.1. Platform332 Board IP Modules

The Platform332 Board has Industrial Pack (IP) modules installed in slots A through D. The IP jumper configurations for each type of IP Module are the same regardless of where it is installed. See the figures listed below for IP module jumper configurations.

IP-16DAC	Figure 2-24
IP-UNIDIG	Figure 2-25
IP-16ADC	No Jumpers Required
IP-QUAD	No Jumpers Required

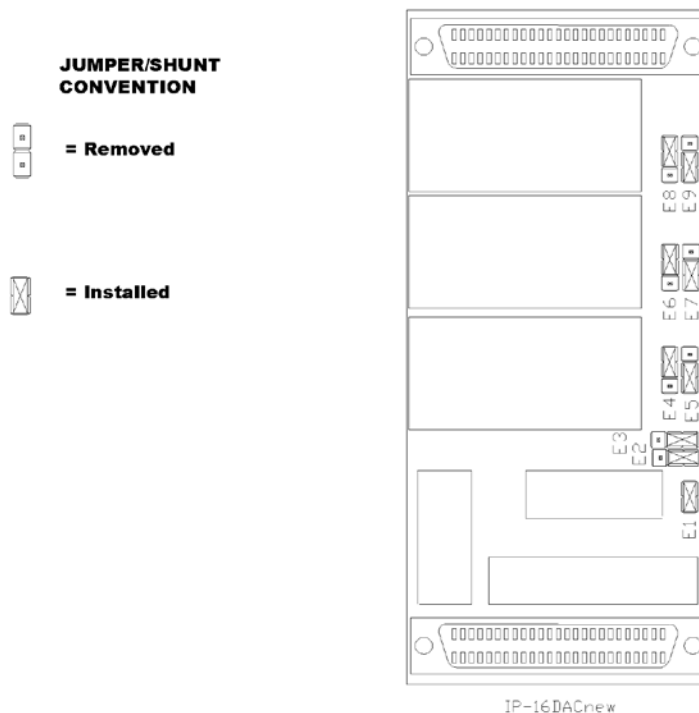


Figure 2-24. IP-16DAC Jumper Configuration

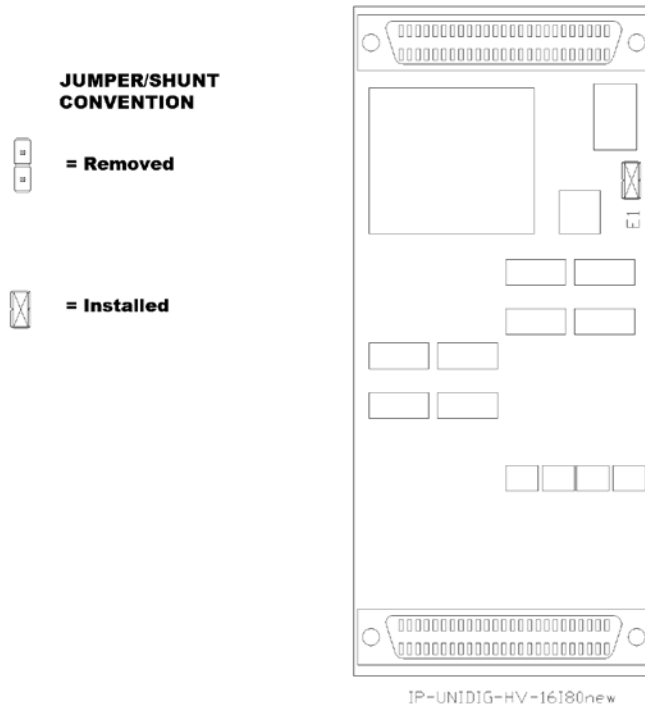


Figure 2-25. IP-UNIDIG Jumper Configuration

2.4.3.2.2. Platform332 Boards

There are two Platform332 Boards in the ECL System. Each must be configured with the proper IP modules and jumpers prior to installing a new one. A Fiber Optic transceiver pack (GSnet) is installed in slots E and F and must also be configured. The two Platform332 boards are:

- CLS-1 Figure 2-26
- UTL-1 Figure 2-27

Figure 2-26 and Figure 2-27, show the IP configurations and jumper locations. For proper jumper configuration, use drawing 6520ACJ755, these illustrations, and the removed board as guides.

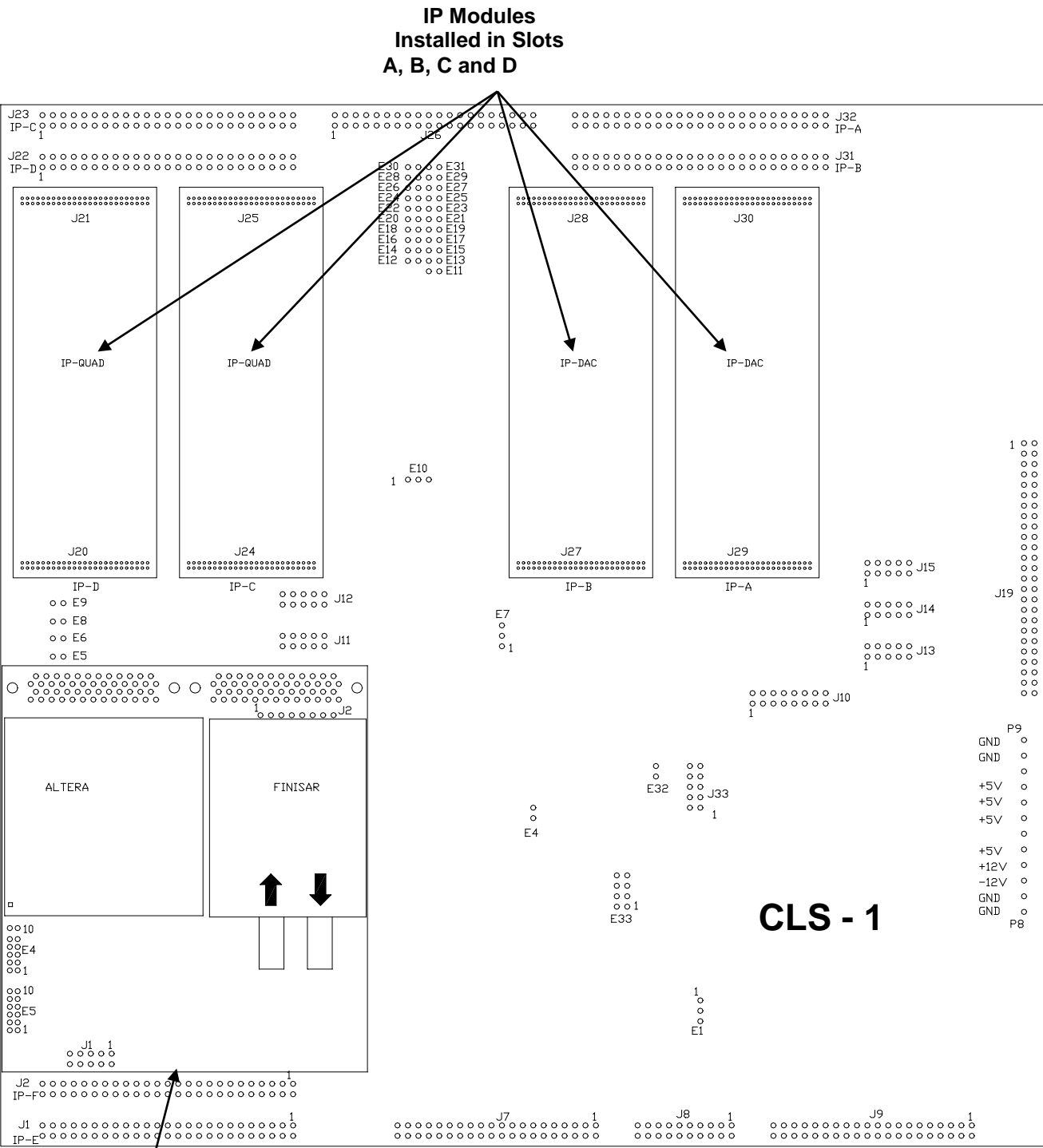


Figure 2-26. CLS-1 Platform332 Board Configuration

IP-GSnet Card



2.4.3.2.3. Power Supply Signal Condition Boards

There are two Power Supply Signal Condition Boards (PSSCB) in the ECLS. Each must be configured with the proper jumper settings prior to installing a new one. The jumpers on the lower right portion of the board set the program gain values. Figure 2-28 is an illustration showing the program gain values for each jumper position (when a jumper is installed in that position). The two PSSCBs are:

- CLS-1
- UTL-1

Figure 2-29 shows the jumper locations on the PSSCB. For proper jumper configuration, use drawing 6520ACJ755, these illustrations, and the removed board as guides.

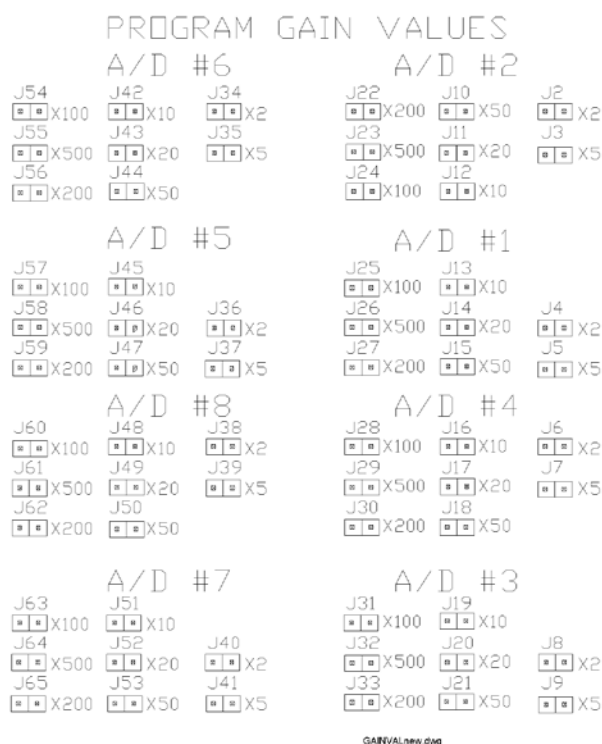
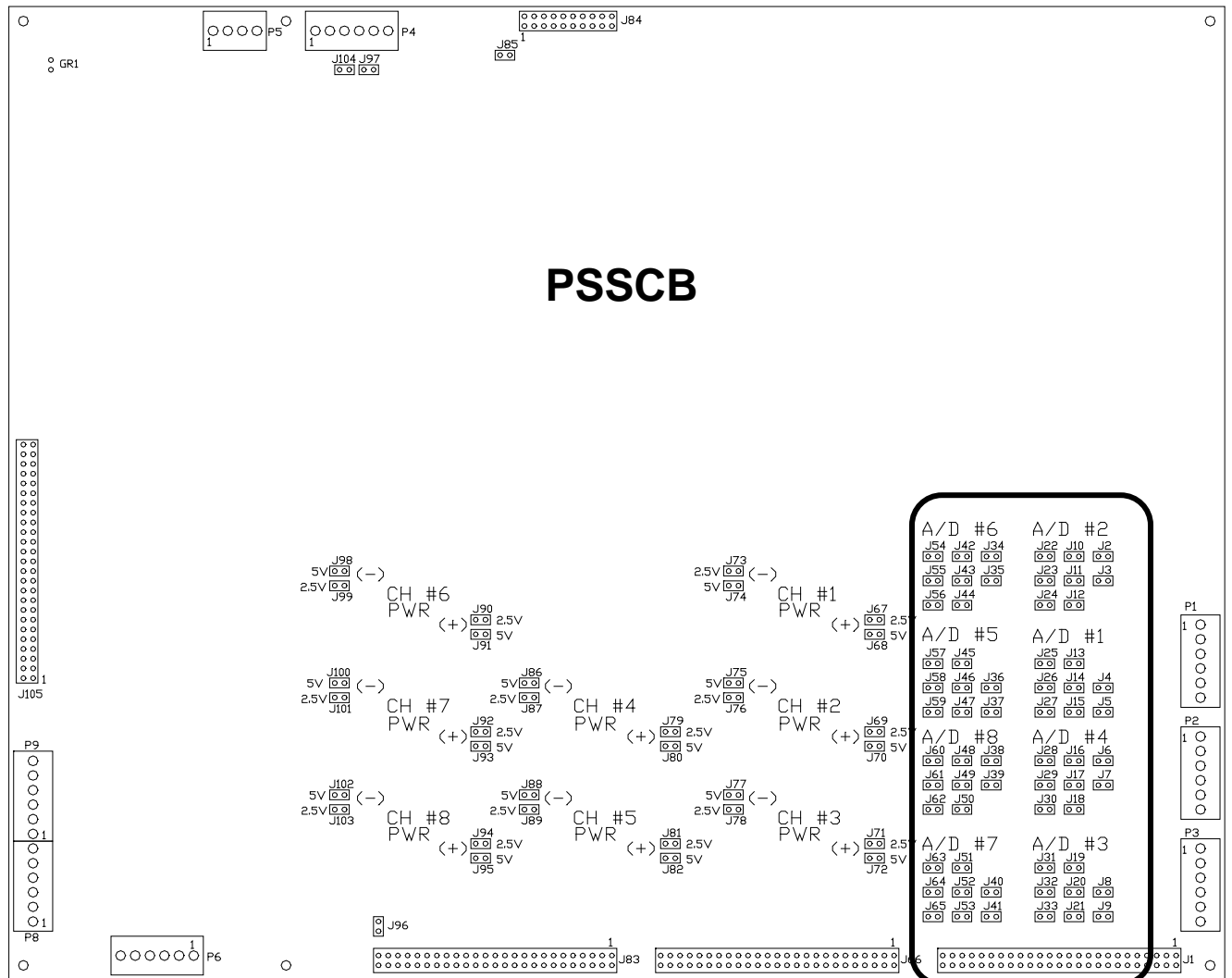


Figure 2-28. Program Gain Values



Program Gain
Jumper
Location

Figure 2-29. Power Supply Signal Condition Board Configuration

2.4.3.3. DRI Platform Power Supply

The Lambda +24VDC DRI Platform power supply is shown in Figure 2-30. Make sure the strapping is removed for 220VAC operation. The Astec +24VDC DRI Platform power supply shown in Figure 2-31 does not require any strapping.

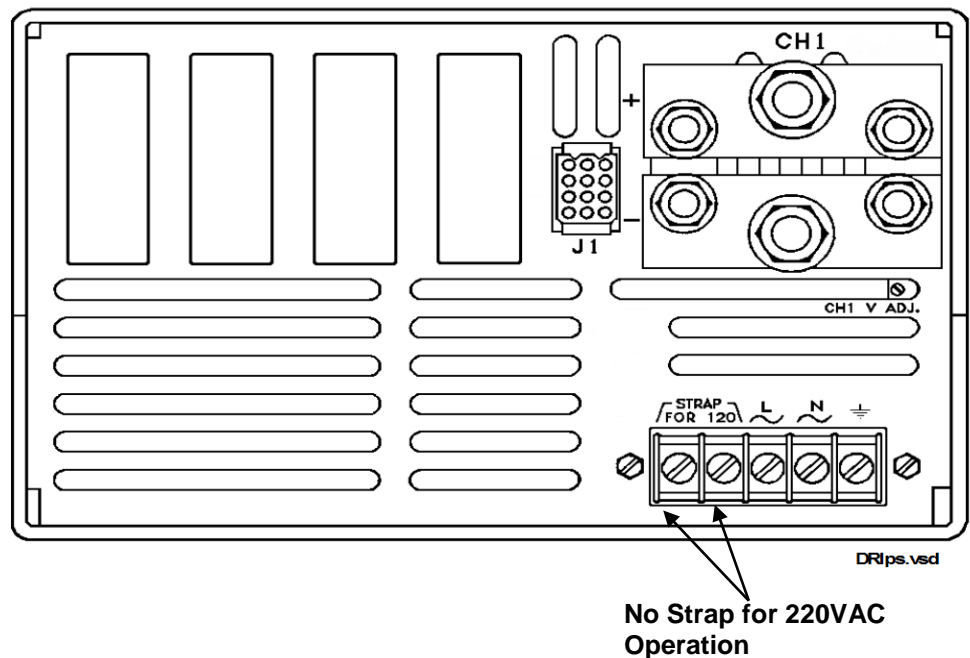


Figure 2-30. Lambda DRI Platform Power Supply

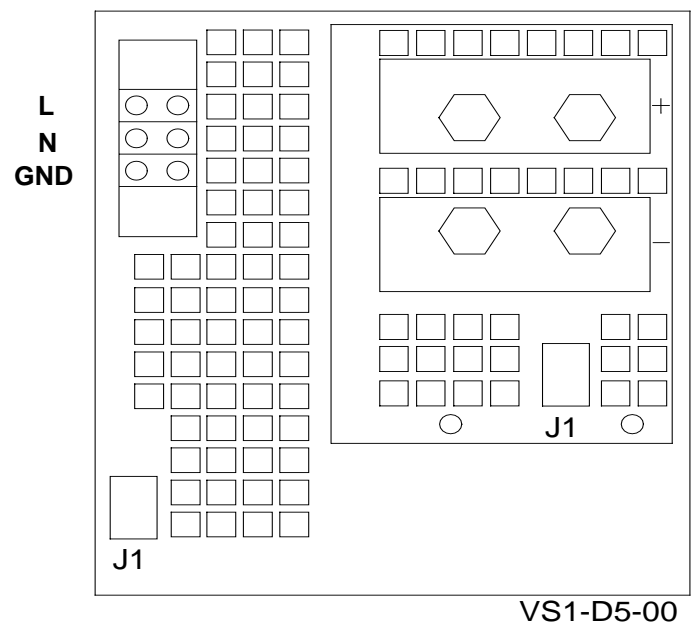


Figure 2-31. Astec DRI Platform Power Supply

2.4.3.4. DAS Platform Assembly

The DAS Platform Assembly resides at 9A3A6 in a slide-out frame and consists of:

- Industrial Packs (IPs) on the PCI on the Master and Slave IP carrier board
- Power Supply and Signal Conditioning Board (PSSCB)
- GSNet interface board

The DAS chassis must be modified and configured in accordance with drawing 6520ACJ855 prior to installing in the simulator. In most cases, the modification will be completed prior to shipment to the site; however, it will be necessary to complete the configuration of the boards when replacing for repair.

2.4.3.4.1. Industrial Packs

The DAS chassis has a PCI-Master and a PCI-Slave IP carrier board. Listed below are the IP boards that are installed on them and the Figure Number showing their configurations. Configure the boards in accordance with drawing 6520ACJ855. Refer to Figure 2-32 for the location of the IPs.

Part Number	Position	Figure Number	
IP-UNIDIG-HV-1618	Master E & F	Figure 2-33	
IP-AD16SS	Slave G & H	Figure 2-34	NOTE: No jumpers required

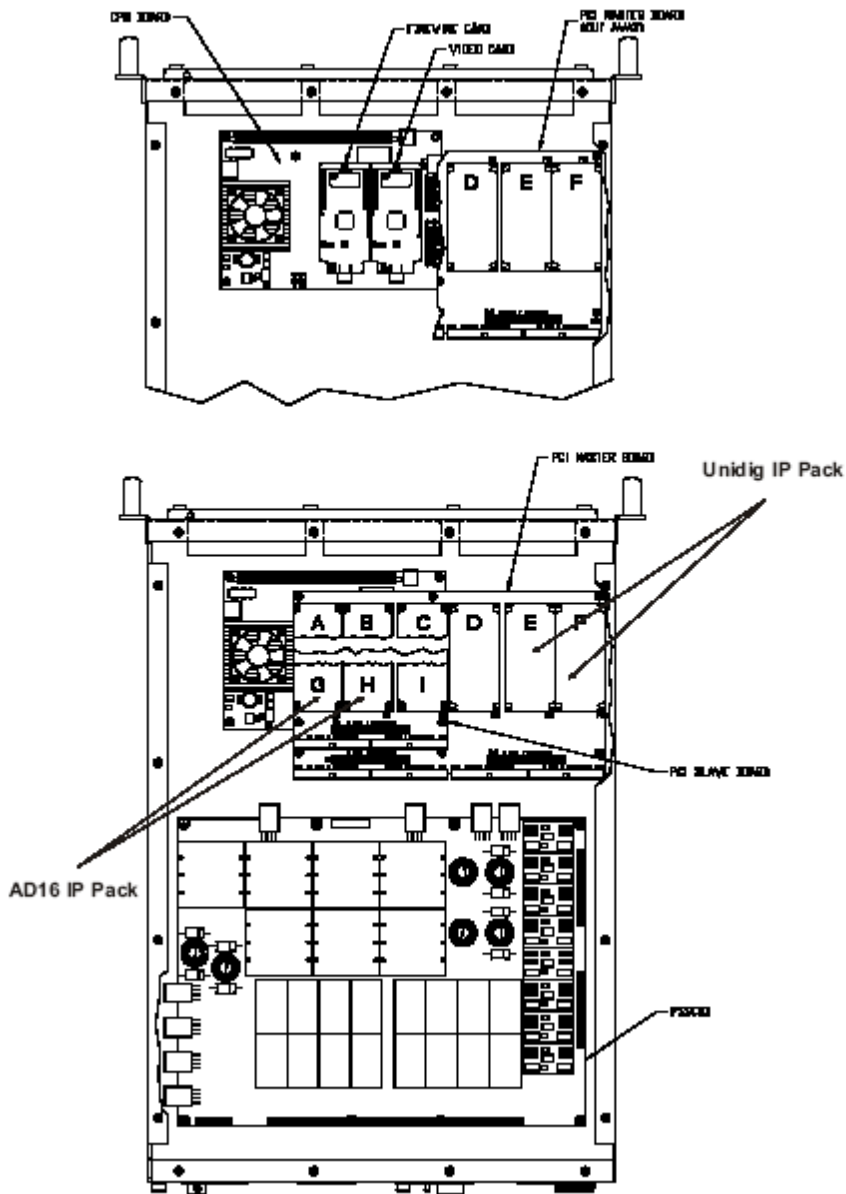


Figure 2-32. DAS Chassis Configuration

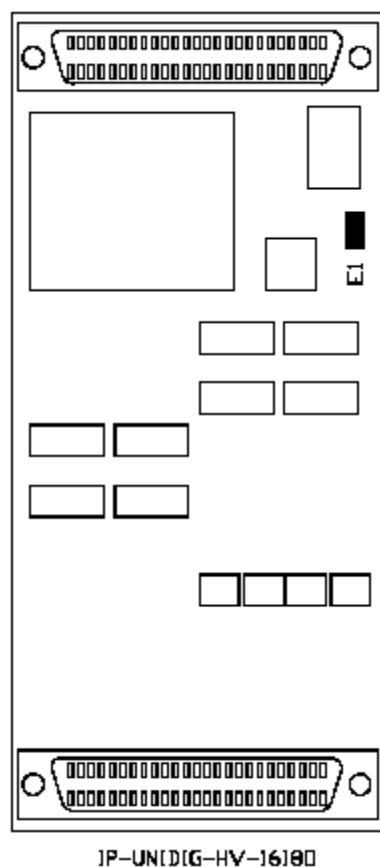


Figure 2-33. IP-UNIDIG-HV-1618 Jumper Configuration

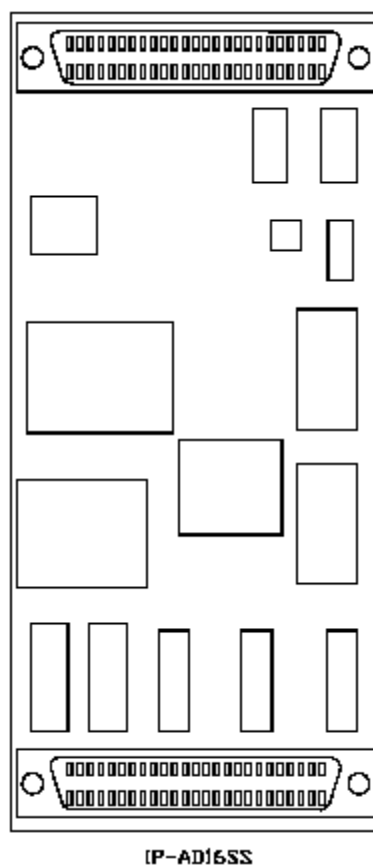


Figure 2-34. IP-AD16SS Jumper Configuration

2.4.3.4.2. Power Supply and Signal Conditioning Board (PSSCB)

The DAS chassis PSSCB is configured in accordance with drawing 6520ACJ855. The excitation voltages and gains should be set up to match the board being removed. See Figure 2-35 for a typical PSSCB configuration.

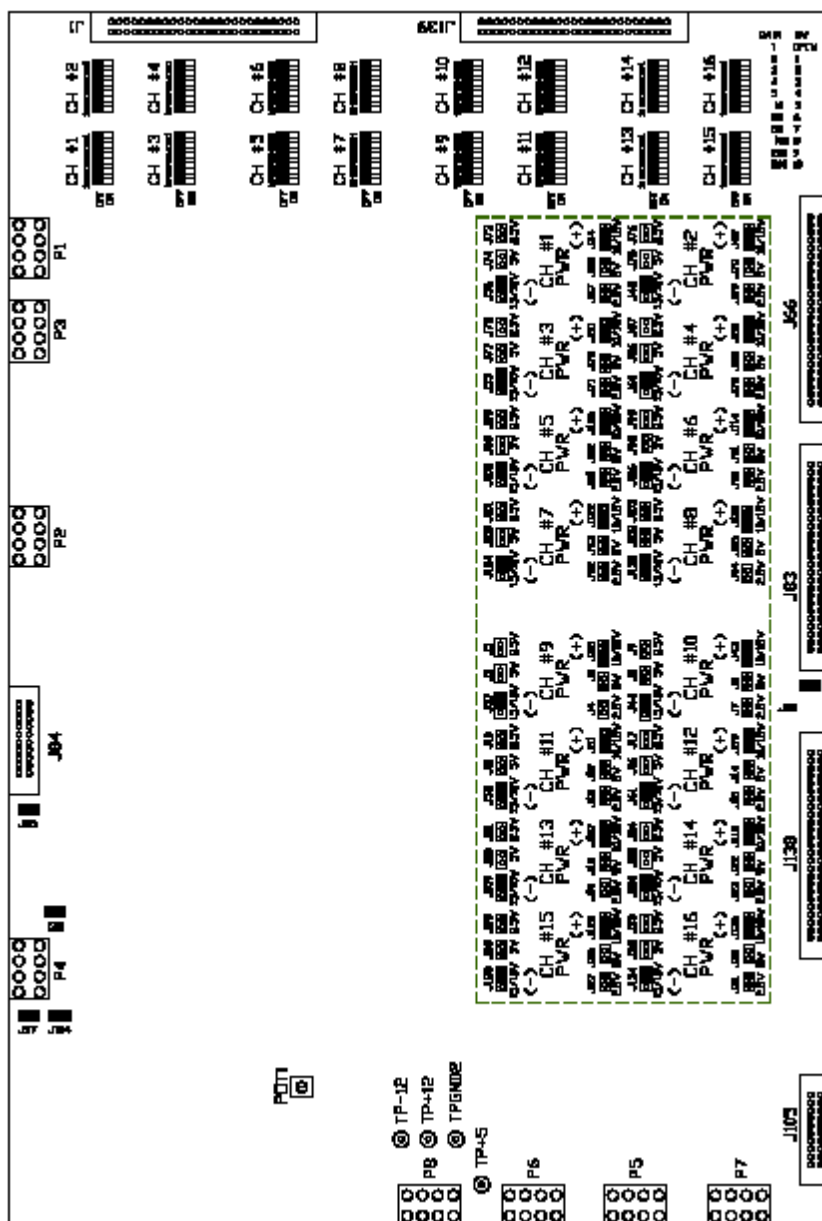


Figure 2-35. Typical PSSCB Configuration

2.4.3.5. DDF File Installation Instructions for new Version of Primary Control Actuator for Torque and Velocity Applications and Toe Brake Actuator

NOTE

If the new “motor.ddf” file is already copied to the PowerTools equipped laptop, proceed to Step 3d. below.

NOTE

No firmware changes are required. B9 is still the firmware used.

NOTE

The .ddf file contains mechanical and electrical specifications for the motor so that the drive can properly control the motor and load. A standard set of motors (for the old primary actuators) is provided in the installed directory of PowerTools. The new version primary actuator does not use a "Standard Motor" file but requires the use of a .ddf file to configure the drive. The new .ddf file contains both GS and GSX motors.

For installing the “ENG SX30ddf.txt” .ddf file necessary for the suitable substitute primary control actuator described in 6520ACJ053 or the toe brake actuator described in 6520ACJ132, follow the steps below.

2.4.3.5.1. Creating a Custom Motor File

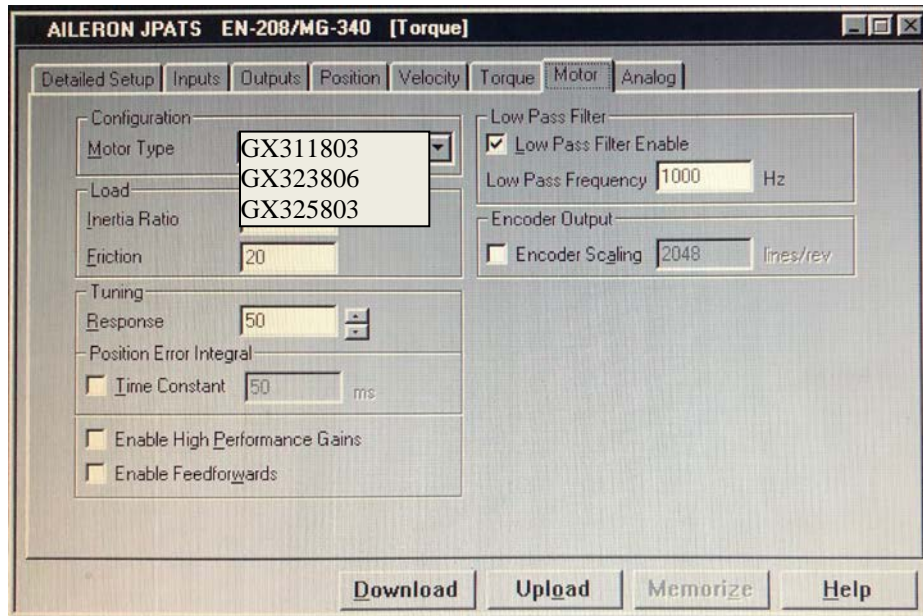
- 1) From the CDR or any acceptable removable media, copy “ENG SX30ddf.txt” and paste it in C:> Emerson > PTools on the laptop.
- 2) Delete the file called "motor.ddf" * NOT* “stdmotor.ddf” in this directory.
- 3) For the Emerson, EN 208, rename the copied file (ENG SX30ddf.txt) with the following name "motor.ddf".

NOTE

File must be “motor.ddf” or it will not work with the servo amp.

- a) At pop-up, click on “Yes”.
- b) At pop-up, click on “Yes”.
- c) Close directory and all open windows.
- d) Disconnect and remove bad torque (elevator or aileron), velocity actuator, or toe brake actuator. See 5.7.3.5.3 GS to GSX Primary Controls Actuator Hardware Upgrade Instructions or 5.7.3.5.4 GS to GSX Toe Brake Actuator Hardware Upgrade.
- e) Connect proper cable from laptop to the correct servo amp (Elevator, Aileron or Rudder).
- f) Run the PowerTools software.
 1. Click on “Device”.

- a. Click on “Upload All”.
- b. Click on “All Drives”.
- c. Click on “Ok”.
- d. Click on “Disconnect” at the bottom of the pop-up window.
- e. Click on “Motor” tab.
 - Select “Motor Type”.



- i. From drop-down arrow, select:
 - 1) Aileron or Elevator: “GX311803”
 - 2) Rudder: “GX325803”
 - 3) Toe Brake: “GSX323806”
 - ii. Click on “Download”.
- f. Servo amp and actuator should calibrate and work normally.

NOTE

If it fails check for error codes on the appropriate servo amp, check all actuator connections and verify the new feedback cable is connected properly. Return to Step 3) e) above.

- 4) Close all open programs:
 - a) Close pop-up in PowerTools.
 - b) Click on “No” for message pop-up.
 - c) Close PowerTools program.

- 5) Shutdown laptop.
- 6) Disconnect from servo amp.

Process is done.

2.4.4. Flight Deck I/O System (FDKIO)

The FDKIO System computer contains components that must be configured prior to initial power-up. These components include a hard disk drive, a PCI bus single board computer card assembly, and IP carrier card assemblies. Other components such as a 3.5 floppy disk drive, a network interface card, and three ARINC 429 interface cards, reside in the FDKIO computer chassis; however, they are factory set and require no further configuration.

2.4.4.1. Hard Disk Drive

Figure 2-36 illustrates the jumper/shunt configuration of the hard disk drive in the Flight Deck I/O system computer. Use this illustration only as a guide. A replacement drive might not be from the same manufacturer; therefore, the configuration might be different. Prior to installing a replacement hard disk drive, ensure it is configured for the master- or single-drive operation. Use the vendor information shipped with the drive to configure the drive for master- or single-drive operation.

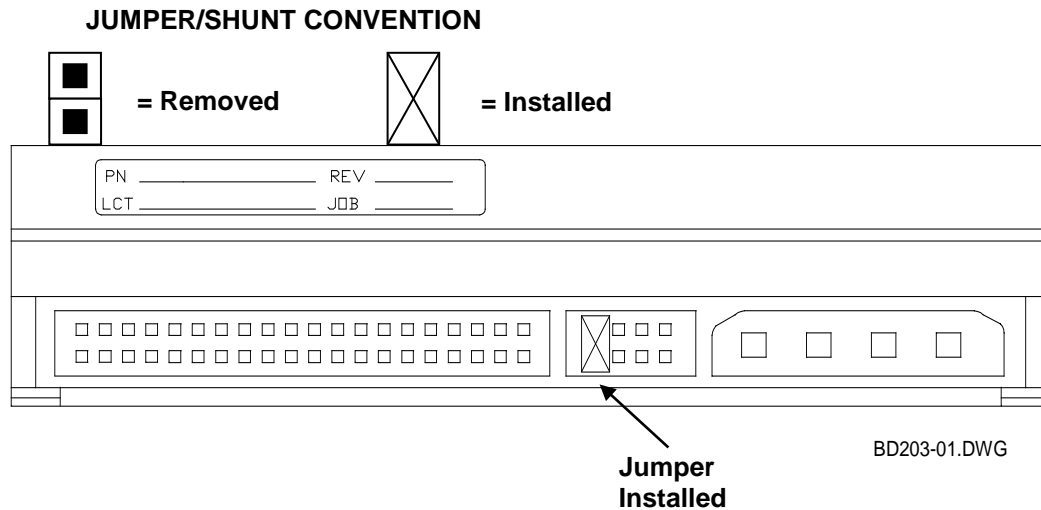


Figure 2-36. Flight Deck I/O Computer Hard Disk Drive Configuration

2.4.4.2. PCI Bus Single Board Computer Card Assembly

Figure 2-37 illustrates the jumper/shunt configuration of the PCI Bus Single Board Computer Card Assembly in the instructor operating station computer. Figure 2-38 describes the configuration settings for the card assembly.

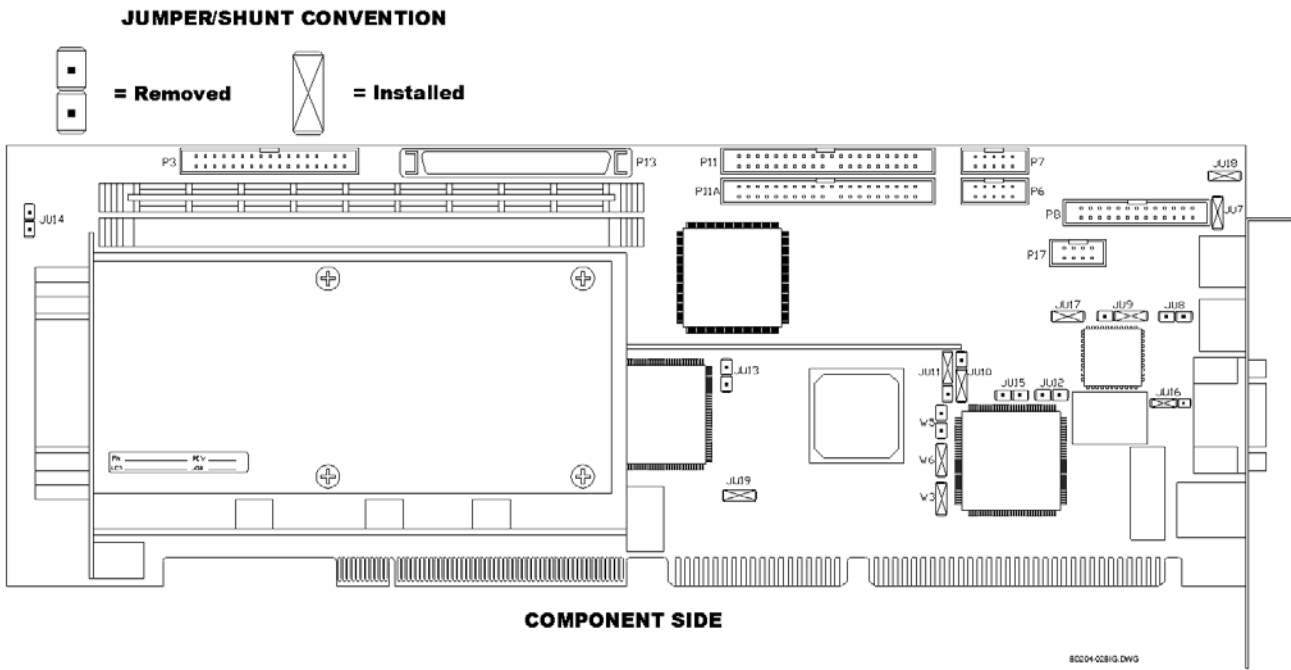















Figure 2-37. Flight Deck I/O PCI Bus Single Board Computer Card Assembly Configuration

CARD JUMPERS

REFERENCE DESIGNATOR	DESCRIPTION	-501
JU7	COMBO I/O (PSA) SPEAKER CONNECT (ALSO REFER TO JU18 - COMBO I/O RESET CONNECT.) INSTALL TO CONNECT SPEAKER DATA SIGNAL TO PIN 8 OF THE COMBO I/O CONNECTOR (PSA). REMOVE TO DISCONNECT.	 JU7
JU8	PASSWORD CLEAR INSTALL FOR ONE POWER-UP CYCLE TO RESET THE PASSWORD TO THE DEFAULT (NULL PASSWORD). REMOVE FOR NORMAL OPERATION.	JU8 
JU9	CRT TYPE SELECT INSTALL ON THE LEFT FOR A MONOCHROME CRT. INSTALL ON THE RIGHT FOR A COLOR CRT.	JU9 
JU10/JU11	SYSTEM FLASH ROM OPERATIONAL MODES THE FLASH ROM HAS TWO PROGRAMMABLE SECTIONS: THE BOOT BLOCK FOR "FLASHING" IN THE BIOS AND THE MAIN BLOCK FOR THE EXECUTABLE BIOS AND PnP PARAMETERS. NORMALLY ONLY THE MAIN BLOCK IS UPDATED WHEN A NEW BIOS IS FLASHED INTO THE SYSTEM. PROGRAM ALL (BOOT AND MAIN) JU10 JU11 NORMAL PnP AND PROGRAM BOTTOM BOTTOM MAIN BLOCK BOTTOM TOP WRITE PROTECT TOP TOP	JU11 JU10 
JU12	CMOS CLEAR INSTALL TO CLEAR. REMOVE TO OPERATE.	JU12 
JU13	SCSI TERMINATION ENABLE INSTALL TO DISABLE ON-BOARD ACTIVE TERMINATION FOR THE SCSI INTERFACE. REMOVE TO ENABLE ACTIVE TERMINATION.	JU13 
JU14	FAN SPEED MONITOR THIS JUMPER MUST BE REMOVED (DISABLED).	JU14 
JU15	3.3V MONITOR ENABLE INSTALL TO ENABLE THE 3.3V MONITOR. REMOVE TO DISABLE THE MONITOR.	JU15 
JU16	WATCHDOG TIMER INSTALL ON THE LEFT FOR NORMAL RESET OPERATION. INSTALL ON THE RIGHT TO ENABLE WATCHDOG TIMER OPERATION.	JU16 
JU17	INTERRUPT 12 (IRQ12) SELECT INSTALL TO DEDICATE IRQ12 TO THE PS/2 MOUSE. REMOVE TO MAKE IRQ12 AVAILABLE FOR SYSTEM USE.	JU17 
JU18	COMBO I/O (PSA) RESET CONNECT (ALSO REFER TO JU7-COMBO I/O SPEAKER CONNECT.) INSTALL TO CONNECT RESET DATA SIGNAL TO PIN 1 OF THE COMBO I/O CONNECTOR (PSA). REMOVE TO DISCONNECT.	JU18 
JU19	SCSI ACTIVITY LED ENABLE INSTALL TO LIGHT THE HARD DRIVE LED FOR SCSI DRIVE ACTIVITY. REMOVE IF YOU DO NOT HAVE A SCSI DRIVE (i.e., THE SCSI CONTROLLER IS NOT BEING USED).	JU19 
W3,W5,W6	CPU SPEED JUMPERS THESE THREE JUMPERS MUST BE SET CORRECTLY TO ALLOW THE SBC TO TAKE FULL ADVANTAGE OF THE SPEED OF THE PENTIUM CPU. THESE JUMPERS MUST BE SET AS SPECIFIED BELOW. CPU SPEED SYNTHESIZER FREQUENCY W3 W6 W5 450MHz 100MHz OUT IN OUT 400MHz 100MHz IN IN OUT 350MHz 100MHz OUT OUT IN 333MHz 66MHz IN OUT OUT 300MHz 66MHz OUT IN OUT 266MHz 66MHz IN IN OUT	W5 W6 W3 

bd204big.dwg

Figure 2-38. Flight Deck I/O Computer PCI Bus Card Assembly Jumper Descriptions

2.4.4.3. IP Carrier Card Assemblies

The IP Carrier Card assemblies consist of 6-slot industry pack (IP) carrier circuit cards with application-specific IP modules installed on them. In the FDKIO system are three IP Carrier Card Assemblies. One carries the DI IP modules, one carries the DO IP modules, and one carries the AI, AO, and RS422 IP modules. Figure 2-39 shows the location of the IP carrier card assemblies in the Flight Deck I/O computer. Some IP modules must also be configured prior to installing them on the IP Carrier.

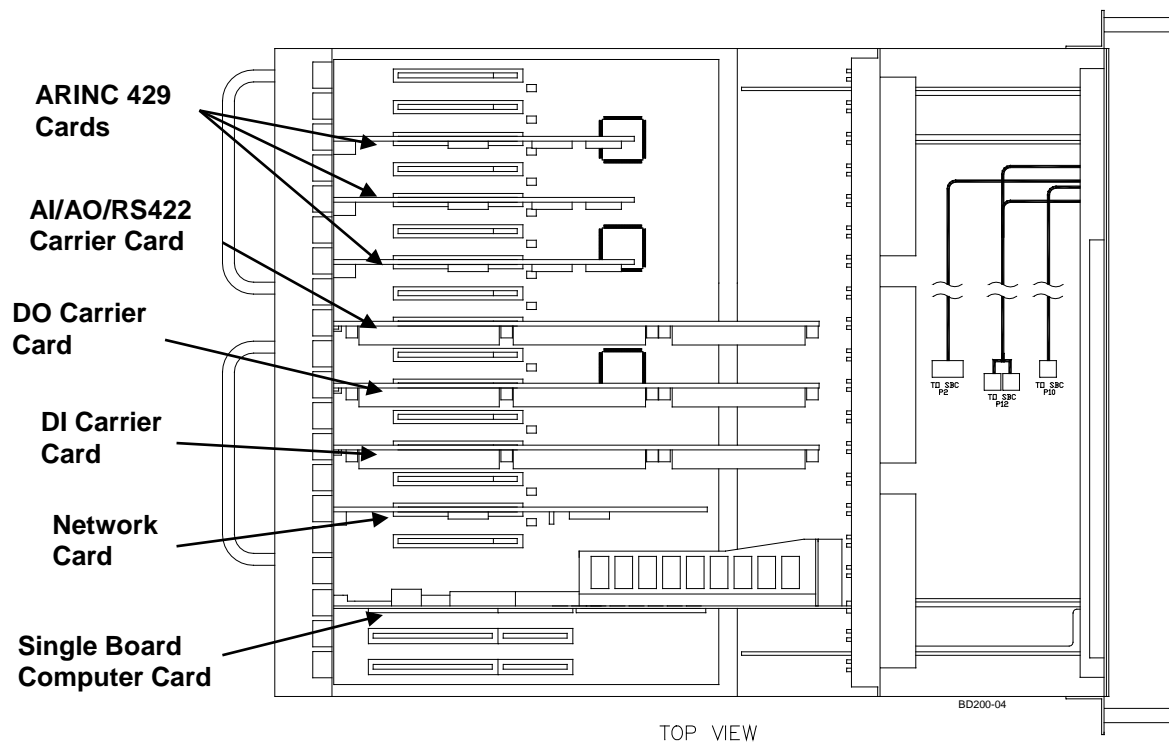


Figure 2-39. Flight Deck I/O Circuit Card Locations

2.4.4.3.1. Carrier Card w/ DI IP Modules

Figure 2-40 shows the DI IP module configuration and the IP Carrier Card Assembly with the DI IP Modules mounted on it.

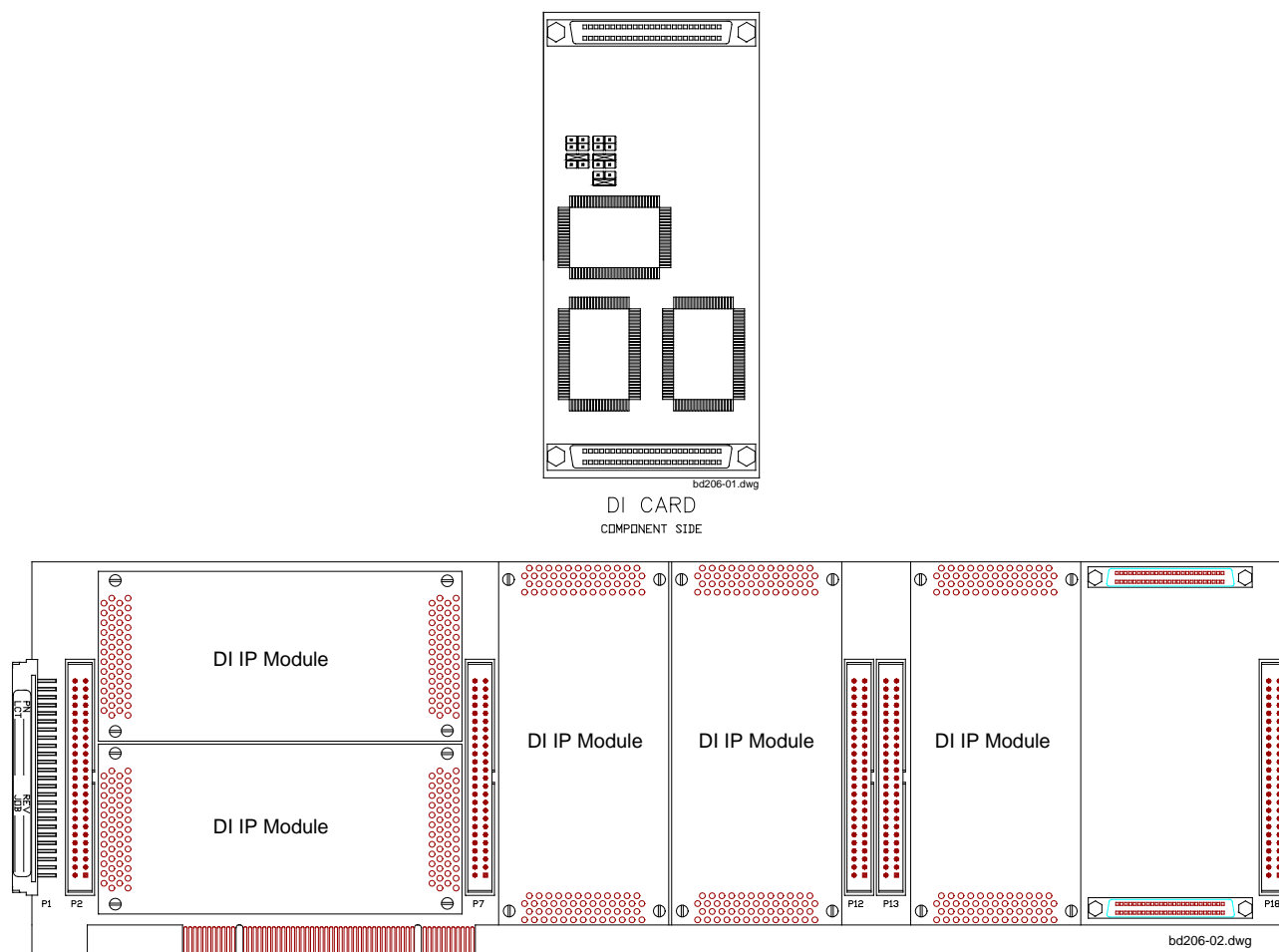


Figure 2-40. IP Carrier w/ DI IP Modules

2.4.4.3.2. Carrier Card w/ DO IP Modules

Figure 2-41 shows the IP Carrier Card Assembly with the DO IP Modules mounted on it. The DO IP module does not require configuration.

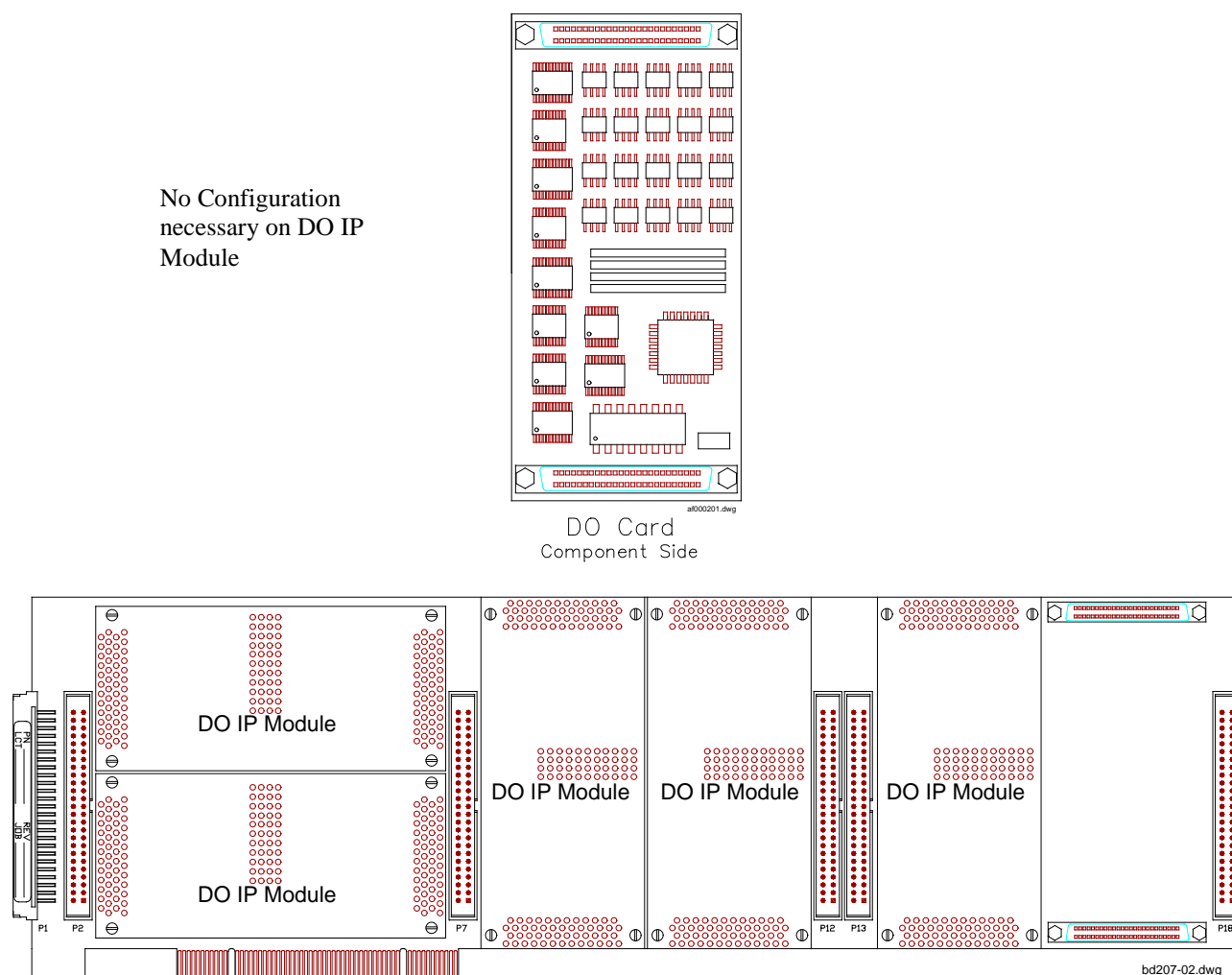


Figure 2-41. IP Carrier w/DO IP Modules

2.4.4.3.3. Carrier Card w/ AI, AO, and RS422 IP Modules

Figure 2-42 shows the AI and AO IP module configuration and the IP Carrier Card Assembly with the AI, AO, and RS422 IP Modules mounted. The RS422 IP module does not require configuration.

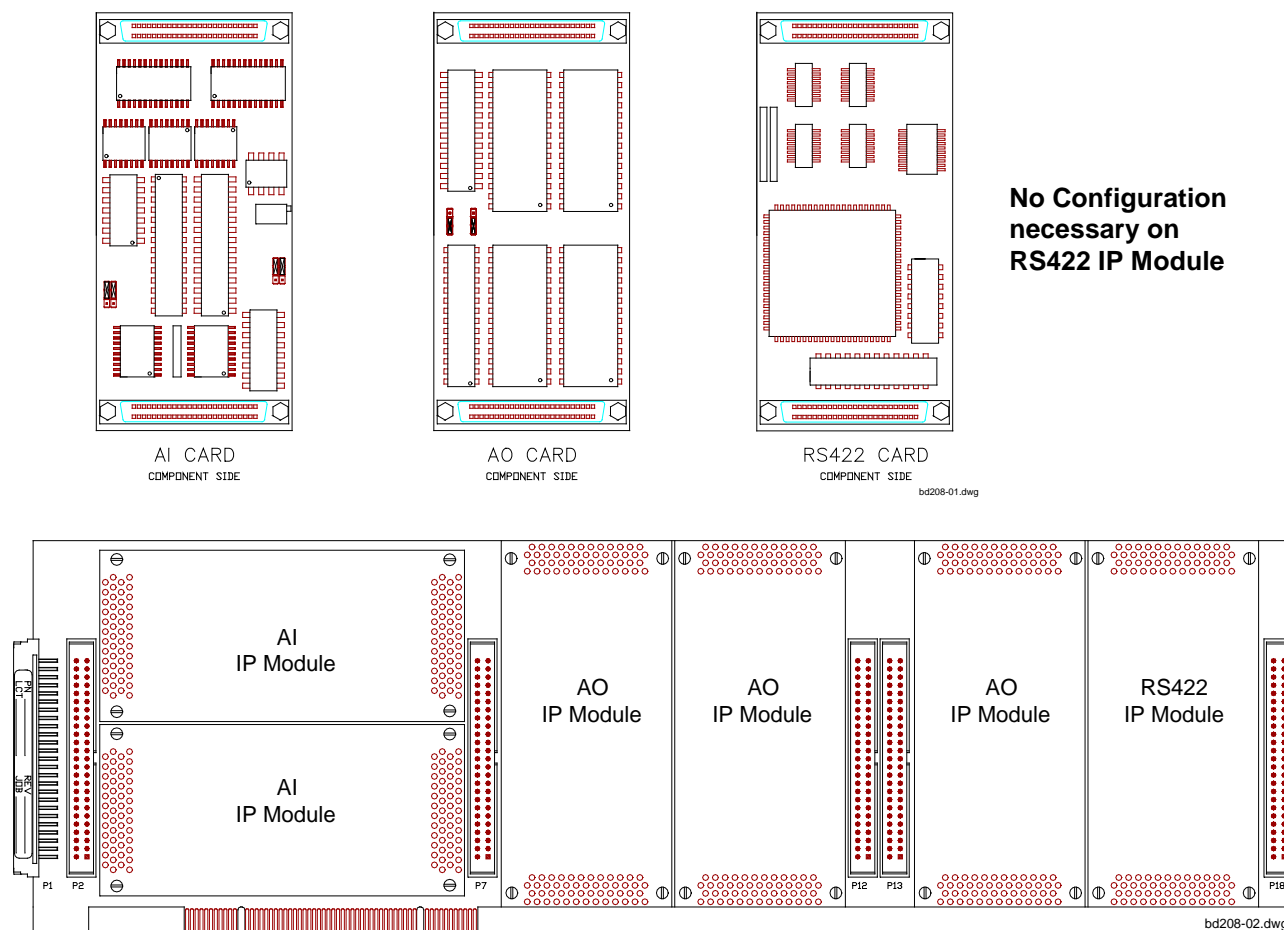


Figure 2-42. IP Carrier w/ AI, AO, and RS422 IP Modules

2.4.4.4. ARINC 429 Card Assembly

The ARINC 429 Card assemblies reside in slots XA14, XA16, and XA18 of the Flight Deck I/O computer chassis. The cards require no configuration; however, an illustration showing the card layout is shown in Figure 2-43 for informational purpose only.

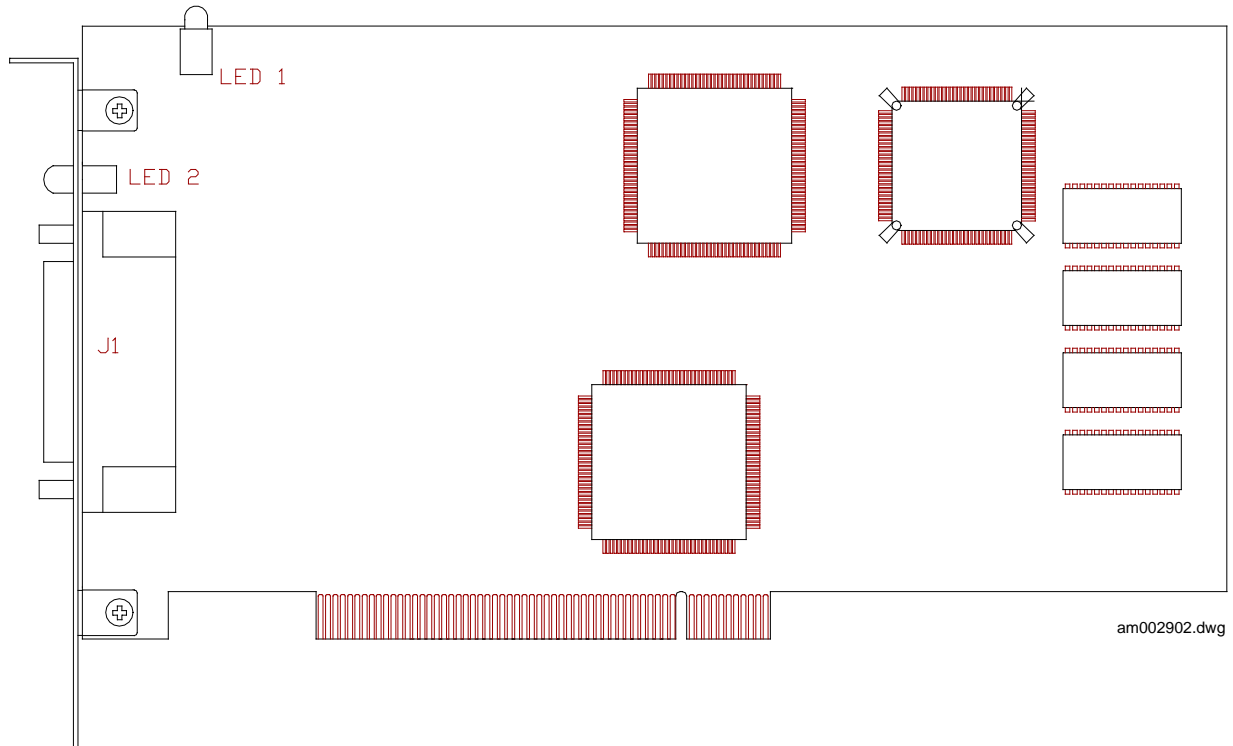


Figure 2-43. ARINC 429 Card Assembly

2.4.5. Instructor Operating System (IOS)

Configure these IOS components prior to initial power-up: a hard disk drive, CD-ROM Drive, and a PCI bus single board computer card assembly. Other components reside in the host computer chassis; however, they are factory set and require no further configuration.

2.4.5.1. Hard Disk Drive

Figure 2-44 illustrates the jumper/shunt configuration of the hard disk drive in the IOS computer. Use the illustration only as a guide. If a replacement drive is acquired, it may not be from the same manufacturer; therefore, the configuration might differ. Prior to installing a replacement hard disk drive, ensure it is configured for the master- or single-drive operation. Use the vendor information shipped with the drive to configure the drive for master- or single-drive operation.

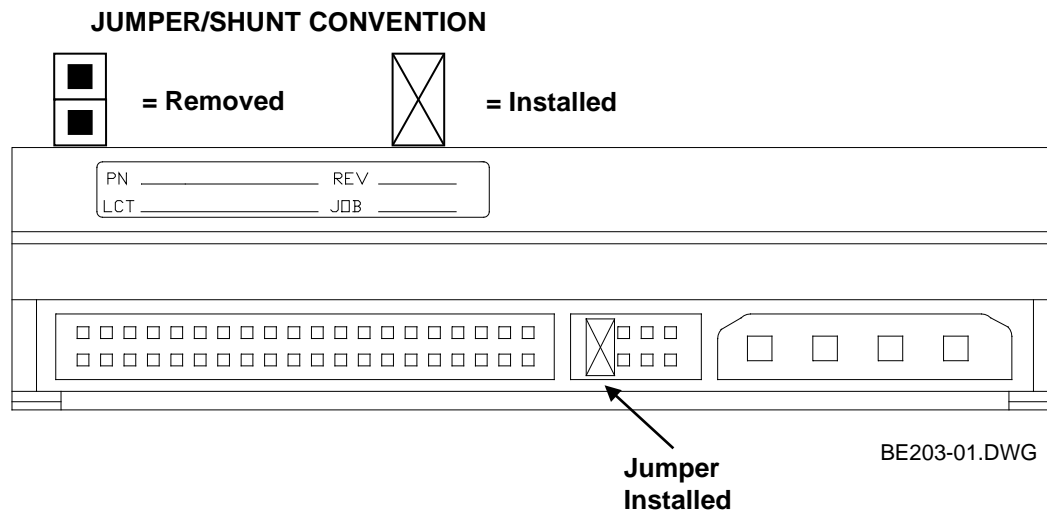


Figure 2-44. Instructor Operating System Computer Hard Disk Drive Configuration

2.4.5.2. CD-ROM Drive

Figure 2-45 illustrates the jumper/shunt configuration of the CD-ROM drive in the IOS computer. Use the illustration only as a guide. If a replacement drive is acquired, it may not be from the same manufacturer; therefore, the configuration might differ. Prior to installing a replacement drive, ensure it is configured for the slave drive operation. Use the vendor information shipped with the drive to configure the drive for the slave drive operation.

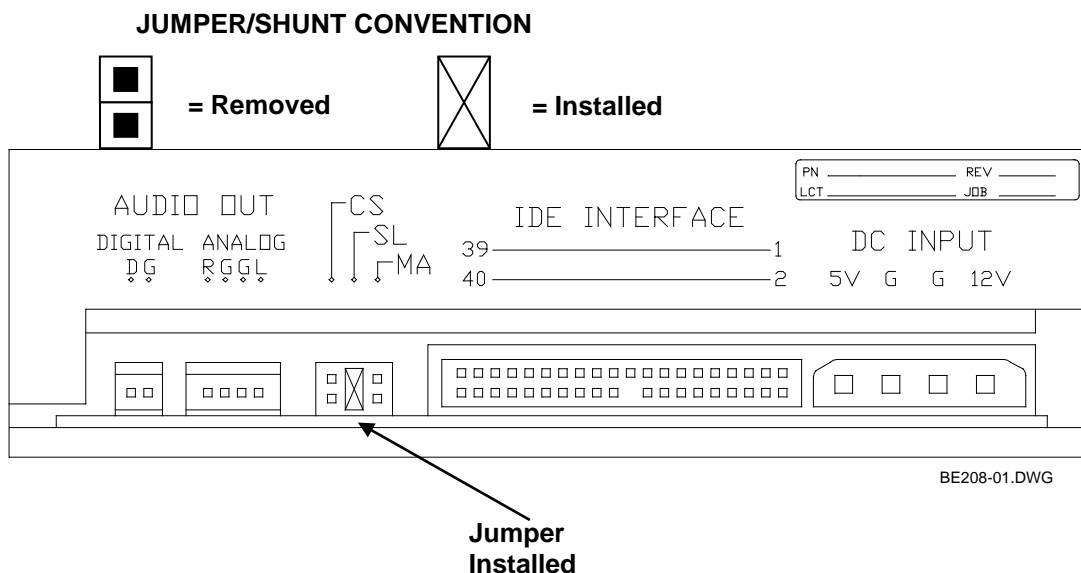


Figure 2-45. IOS Computer CD-ROM Drive Configuration

2.4.5.3. PCI Bus Single Board Computer Card Assembly

Figure 2-46 illustrates the jumper/shunt configuration of the PCI Bus Single Board Computer Card Assembly in the IOS computer. Figure 2-47 describes the configuration settings for the card assembly.

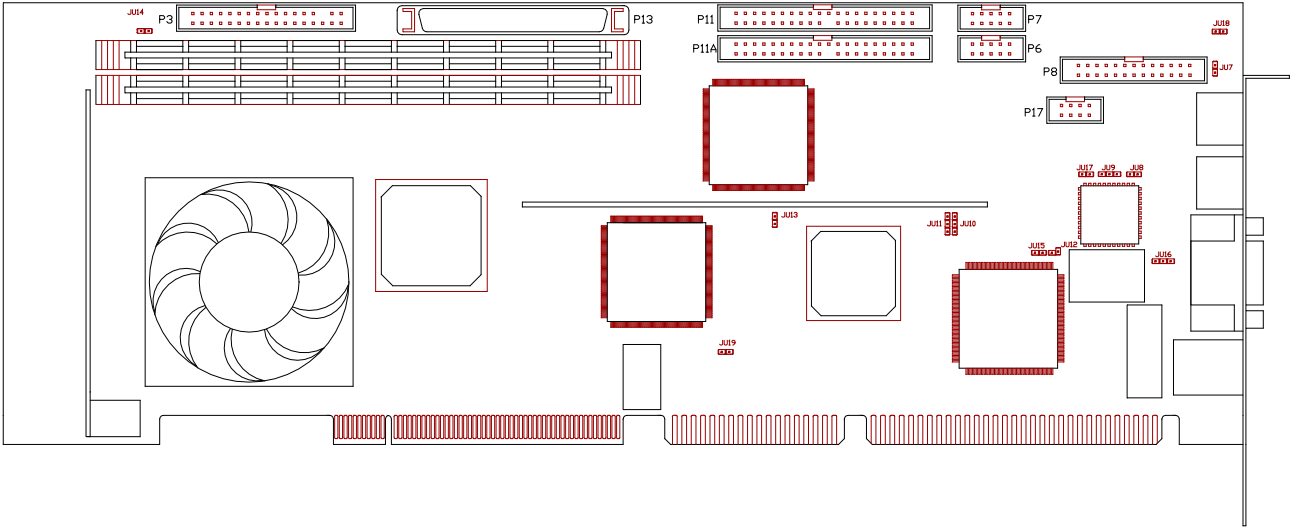

















Figure 2-46. IOS Computer PCI Bus Single Board Computer Card Assembly Configuration

CARD JUMPERS

REFERENCE DESIGNATOR	DESCRIPTION	-501																																			
JU7	COMBO I/O (P5A) SPEAKER CONNECT (ALSO REFER TO JU18 - COMBO I/O RESET CONNECT.) INSTALL TO CONNECT SPEAKER DATA SIGNAL TO PIN 8 OF THE COMBO I/O CONNECTOR (P5A). REMOVE TO DISCONNECT.	 JU7																																			
JU8	PASSWORD CLEAR INSTALL FOR ONE POWER-UP CYCLE TO RESET THE PASSWORD TO THE DEFAULT (NULL PASSWORD). REMOVE FOR NORMAL OPERATION.	 JU8																																			
JU9	CRT TYPE SELECT INSTALL ON THE LEFT FOR A MONOCHROME CRT. INSTALL ON THE RIGHT FOR A COLOR CRT.	 JU9																																			
JU10/JU11	SYSTEM FLASH ROM OPERATIONAL MODES THE FLASH ROM HAS TWO PROGRAMMABLE SECTIONS: THE BOOT BLOCK FOR "FLASHING" IN THE BIOS AND THE MAIN BLOCK FOR THE EXECUTABLE BIOS AND PnP PARAMETERS. NORMALLY ONLY THE MAIN BLOCK IS UPDATED WHEN A NEW BIOS IS FLASHED INTO THE SYSTEM. <table><tr><td></td><td>JU10</td><td>JU11</td></tr><tr><td>PROGRAM ALL (BOOT AND MAIN)</td><td>BOTTOM</td><td>BOTTOM</td></tr><tr><td>NORMAL PnP AND PROGRAM MAIN BLOCK</td><td>BOTTOM</td><td>TOP</td></tr><tr><td>WRITE PROTECT</td><td>TOP</td><td>TOP</td></tr></table>		JU10	JU11	PROGRAM ALL (BOOT AND MAIN)	BOTTOM	BOTTOM	NORMAL PnP AND PROGRAM MAIN BLOCK	BOTTOM	TOP	WRITE PROTECT	TOP	TOP	 JU11 JU10																							
	JU10	JU11																																			
PROGRAM ALL (BOOT AND MAIN)	BOTTOM	BOTTOM																																			
NORMAL PnP AND PROGRAM MAIN BLOCK	BOTTOM	TOP																																			
WRITE PROTECT	TOP	TOP																																			
JU12	CMOS CLEAR INSTALL TO CLEAR. REMOVE TO OPERATE.	 JU12																																			
JU13	SCSI TERMINATION ENABLE INSTALL TO DISABLE ON-BOARD ACTIVE TERMINATION FOR THE SCSI INTERFACE. REMOVE TO ENABLE ACTIVE TERMINATION.	 JU13																																			
JU14	FAN SPEED MONITOR THIS JUMPER MUST BE REMOVED (DISABLED).	 JU14																																			
JU15	3.3V MONITOR ENABLE INSTALL TO ENABLE THE 3.3V MONITOR. REMOVE TO DISABLE THE MONITOR.	 JU15																																			
JU16	WATCHDOG TIMER INSTALL ON THE LEFT FOR NORMAL RESET OPERATION. INSTALL ON THE RIGHT TO ENABLE WATCHDOG TIMER OPERATION.	 JU16																																			
JU17	INTERRUPT 12 (IRQ12) SELECT INSTALL TO DEDICATE IRQ12 TO THE PS/2 MOUSE. REMOVE TO MAKE IRQ12 AVAILABLE FOR SYSTEM USE.	 JU17																																			
JU18	COMBO I/O (P5A) RESET CONNECT (ALSO REFER TO JU7-COMBO I/O SPEAKER CONNECT.) INSTALL TO CONNECT RESET DATA SIGNAL TO PIN 1 OF THE COMBO I/O CONNECTOR (P5A). REMOVE TO DISCONNECT.	 JU18																																			
JU19	SCSI ACTIVITY LED ENABLE INSTALL TO LIGHT THE HARD DRIVE LED FOR SCSI DRIVE ACTIVITY. REMOVE IF YOU DO NOT HAVE A SCSI DRIVE (i.e., THE SCSI CONTROLLER IS NOT BEING USED).	 JU19																																			
W3,W5,W6	CPU SPEED JUMPERS THESE THREE JUMPERS MUST BE SET CORRECTLY TO ALLOW THE SBC TO TAKE FULL ADVANTAGE OF THE SPEED OF THE PENTIUM CPU. THESE JUMPERS MUST BE SET AS SPECIFIED BELOW. <table><tr><th>CPU SPEED</th><th>SYNTHESIZER FREQUENCY</th><th>W3</th><th>W6</th><th>W5</th></tr><tr><td>450MHz</td><td>100MHz</td><td>OUT</td><td>IN</td><td>OUT</td></tr><tr><td>400MHz</td><td>100MHz</td><td>IN</td><td>IN</td><td>OUT</td></tr><tr><td>350MHz</td><td>100MHz</td><td>OUT</td><td>OUT</td><td>IN</td></tr><tr><td>333MHz</td><td>66MHz</td><td>IN</td><td>OUT</td><td>OUT</td></tr><tr><td>300MHz</td><td>66MHz</td><td>OUT</td><td>IN</td><td>OUT</td></tr><tr><td>266MHz</td><td>66MHz</td><td>IN</td><td>IN</td><td>OUT</td></tr></table>	CPU SPEED	SYNTHESIZER FREQUENCY	W3	W6	W5	450MHz	100MHz	OUT	IN	OUT	400MHz	100MHz	IN	IN	OUT	350MHz	100MHz	OUT	OUT	IN	333MHz	66MHz	IN	OUT	OUT	300MHz	66MHz	OUT	IN	OUT	266MHz	66MHz	IN	IN	OUT	 W5  W6  W3
CPU SPEED	SYNTHESIZER FREQUENCY	W3	W6	W5																																	
450MHz	100MHz	OUT	IN	OUT																																	
400MHz	100MHz	IN	IN	OUT																																	
350MHz	100MHz	OUT	OUT	IN																																	
333MHz	66MHz	IN	OUT	OUT																																	
300MHz	66MHz	OUT	IN	OUT																																	
266MHz	66MHz	IN	IN	OUT																																	

JUMPER / SHUNT CONVENTION


NOT
INSTALLED


INSTALLED

Figure 2-47. IOS Computer PCI Bus Card Assembly Jumper Descriptions

2.4.6. Student Station

2.4.6.1. Circuit Breaker Panel Covers

In preparation of first use, Mylar covers (6520ACN021M, 6520ACN035M, and 6520ACN036M) will be placed on the Seat Adjust panel and the Forward GEN and Forward BAT circuit breaker panels, respectively, in the following manner.

- 1) Select the corresponding cover for the panel.
- 2) Remove the 4 ea. 6/32" screws from the light plate cover.
- 3) Position Mylar cover over panel.
- 4) Replace 4 ea. light plate cover screws.

2.4.6.2. Emergency Landing Gear Release Handle

Prior to first use, perform the following procedures to ensure the Emergency Landing Gear Release Handle more closely mimics the pull length and pull force requirements found in the aircraft.

- 1) Loosen the allen head screw on the actuator clamp (Find #12, 6520ACK084).

Note

Be sure push release ball bearing (Find #16) does not fall out of handle shaft while adjusting pull length.

- 2) Move back on handle shaft to obtain a length of $1.125'' \pm 0.02''$.
- 3) Tighten clamp allen screw and recheck pull length.
- 4) Push handle all the way in then press the handle release button and pull handle beyond the release lock.

Hook pull-force gauge to the gear release handle. Adjust pull force to 35 lbs. ± 4 lbs by tightening the spring-loaded tension bolt (Find #30) on side of housing.

2.4.7. Fire Detection System

Prior to the initial use of the Fire Detection System, perform the following test procedures.

- 1) Disconnect Zone 1 field wiring at the terminals 37 and 40 on the Master Fire Control board, 30-32X000-160 (BMFC-63), in the Master Control Panel.
- 2) Measure the resistance across the Zone 1 field wires. The resistance should be 3.9K ohms ± 195 ohms. If resistance is infinity, check for the presence of the EDL resistor in the last detector in Zone 1. If the resistance is much less than 3.9K ohms, check for a short between the positive and negative field wires.
- 3) Check for ground fault by measuring resistance between each field wire and chassis ground (terminal 24 on TB01 Master Fire Control board). Resistance should read infinity. Isolate and remove any ground faults.

- 4) Reconnect Zone 1 field wires.
- 5) Repeat steps 1 through 4 for all remaining Zones.
- 6) If the batteries are not already wired, connect them as per Figure 2-48.
- 7) The alarm horn and strobe light, if wired, might activate. If so, they may be temporarily disconnected at connector P6.
- 8) Temporarily attach a 110VAC line cord to the Master Control Panel as shown in Figure 2-48 unless power is already supplied. Make sure TB01 terminal 24 of the Master Fire Control board is connected to safety ground.
- 9) The low battery indicator and system trouble indicator will probably light and the system trouble Sonalert will probably sound. This is normal because the batteries will most likely require recharging. The Sonalert can be silenced with the trouble silence switch on the Master Fire Control board. Eventually, the batteries will become sufficiently charged. As this occurs, the low battery indicator will slowly fade. When the batteries reach full charge, the system trouble Sonalert will sound again. As before, it can be silenced with the trouble silence switch.
- 10) Check for the presence of 120VAC across terminals L1 and L2. The voltage should be no less than 102VAC.
- 11) While the batteries are charging, a voltage of 26-28VDC should be measured across TB03 terminals 43 and 44 on the Master Fire Control board.
- 12) Each of the smoke detectors should be visually inspected to insure that their LEDs are blinking at a rate of 6 times per minute. Failure to blink indicates faulty wiring or a defective detector head. Recheck wiring or replace detector as needed.
- 13) At this time, if any Zones are indicating a trouble condition, it may be because their trouble silence switch is in the wrong position. Ensure that each Zone signal silence switch is properly configured. Reset any existing alarms with the reset switch on the Master Fire Control board.
- 14) If the alarm horn and strobe light are disabled, they should be reconnected at this time. Remove the end of line resistor and connect the alarm horn and strobe light as shown in Figure 2-48. If the positive and negative leads are reversed, the short circuit indicator will light. Reverse the leads if necessary.
- 15) Once the alarm horn and strobe have been determined to be working they may be disconnected and replaced with a 3.9K, ¼ watt resistor while the remainder of the detectors is tested.
- 16) Activate each detector one at a time and verify that the activated detector produces an alarm condition and that the alarm condition is on the appropriate Zone. After each detector is tested, the system will need to be reset with the reset switch located on the Master Fire Control board.
- 17) Positioning a test magnet against the detector housing marked “test” for at least 15 seconds tests smoke alarms. The detector should alarm as indicated by steady illumination of the alarm indicator. To return each detector to normal operation, reset the control unit.

- 18) When testing the detectors, the cables cannot be removed to sound an alarm. This condition will result in a trouble alert, not an alarm condition.
- 19) Once all the detectors have been tested, reconnect the alarm horn and strobe light. The systems will now be operational.

2.4.7.1. Thermal Heat Detector

WARNING

ANY OF THE BELOW ITEMS COULD CHANGE THE FACTORY TEMPERATURE SETTING, WHICH MAY RESULT IN PROPERTY DAMAGE AND/OR PERSONAL INJURY OR DEATH.

IT IS POSSIBLE FOR A UNIT TO HAVE BEEN ABUSED OR DAMAGED AND NOT DISPLAY ANY OUTWARD INDICATION OF THE DAMAGE. ALL UNITS SHOULD BE TESTED PERIODICALLY BY QUALIFIED PERSONNEL IN ACCORDANCE WITH NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS.

- The shell of the detector must remain free from paint, grease, oil, etc. Do not attempt to remove contaminants. Replace the unit.
- Any detector that has been abused or damaged must be replaced.

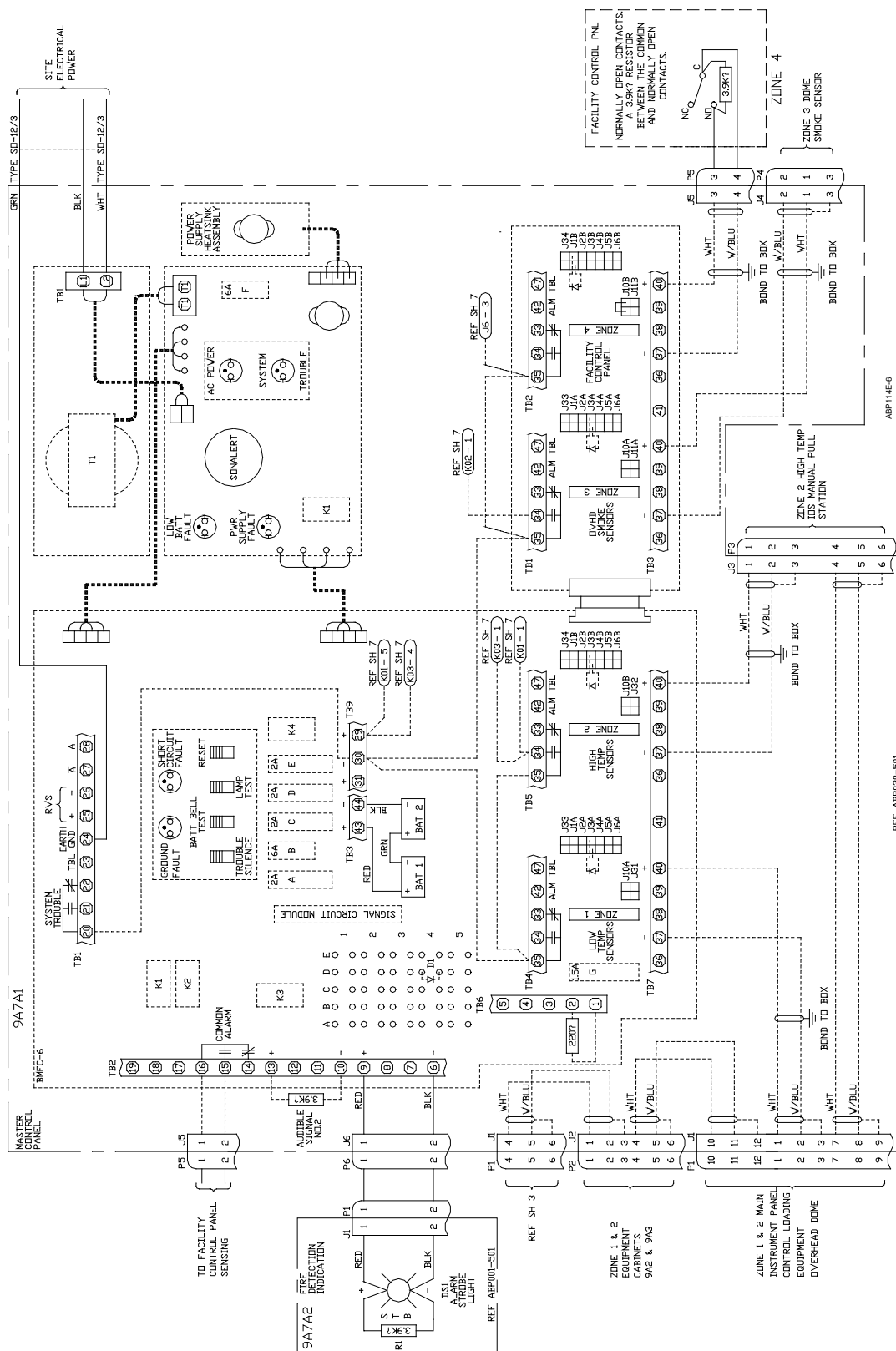


Figure 2-48. Master Fire Control Board

2.4.8. Networking OFT Projectors

The configuration described below is completely optional and can be instituted at any time following OFT installation.

Use these materials and tools for the installation:

- Cat5 cable, xxx 100 feet per OFT (P/N 84K8603 or similar)
- RJ45 connectors, 14 per OFT (P/N FM850-25PAK or similar)
- Cable labels
- Tie wraps
- RJ45 Crimp Tool
- Cable Tester
- Diagonal Cutters
- 12ft Ladder
- #2 Phillips Screwdriver

2.4.8.1. Networking Installation

Follow the steps below to allow networking of the OFT projectors.

- 1) Measure for cables:
 - a. PRJ1=20ft, PRJ3=15ft, PRJ5=12ft, PRJ7=9ft
 - b. PRJ2=16ft, PRJ4=13ft, PRJ6=13ft
- 2) Create, test, and label cables
- 3) Power-down projectors (standby mode).
- 4) Connect cables to Projectors and the Display Switch.



Figure 2-49. Connections from a Projector to the Display Switch

- 5) Neatly run cables and secure to main bundle.



Figure 2-50. Bundled Cables

- 6) Power-on projectors.
- 7) Verify projectors are set to default settings.
- 8) Configure projectors with new IP address.
- Installation>Network Settings
 - IP Address Setup=Manual
 - IP Address=192.168.1.5#
 - Subnet Mask=255.255.255.0
 - Apply

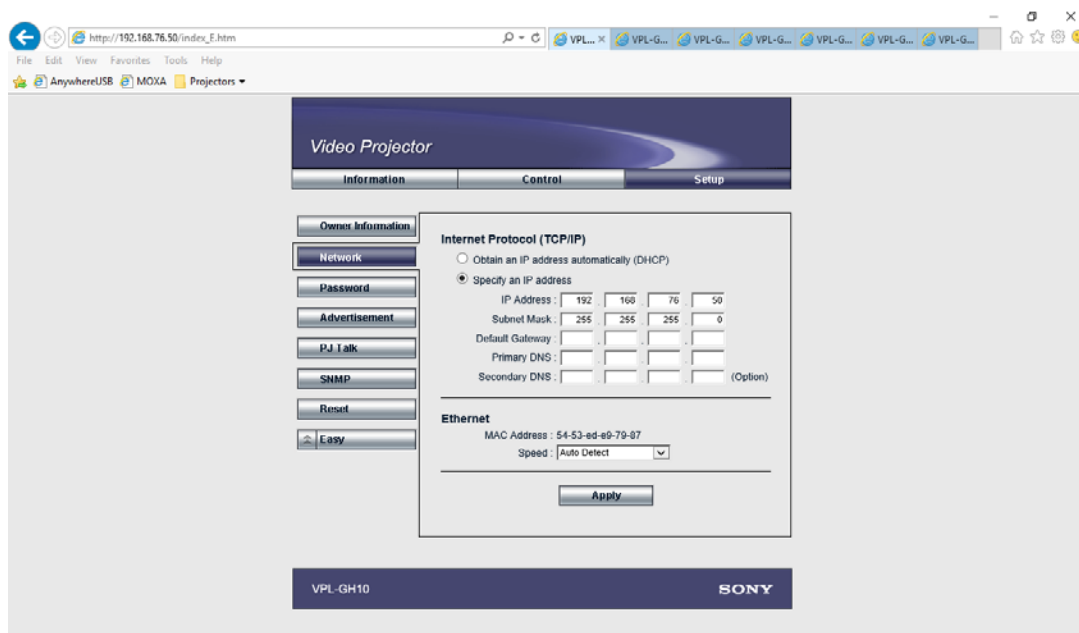


Figure 2-51. Specifying new IP Address

- 9) On the VCC, open a web browser and enter the IP Address of each projector to test connectivity.

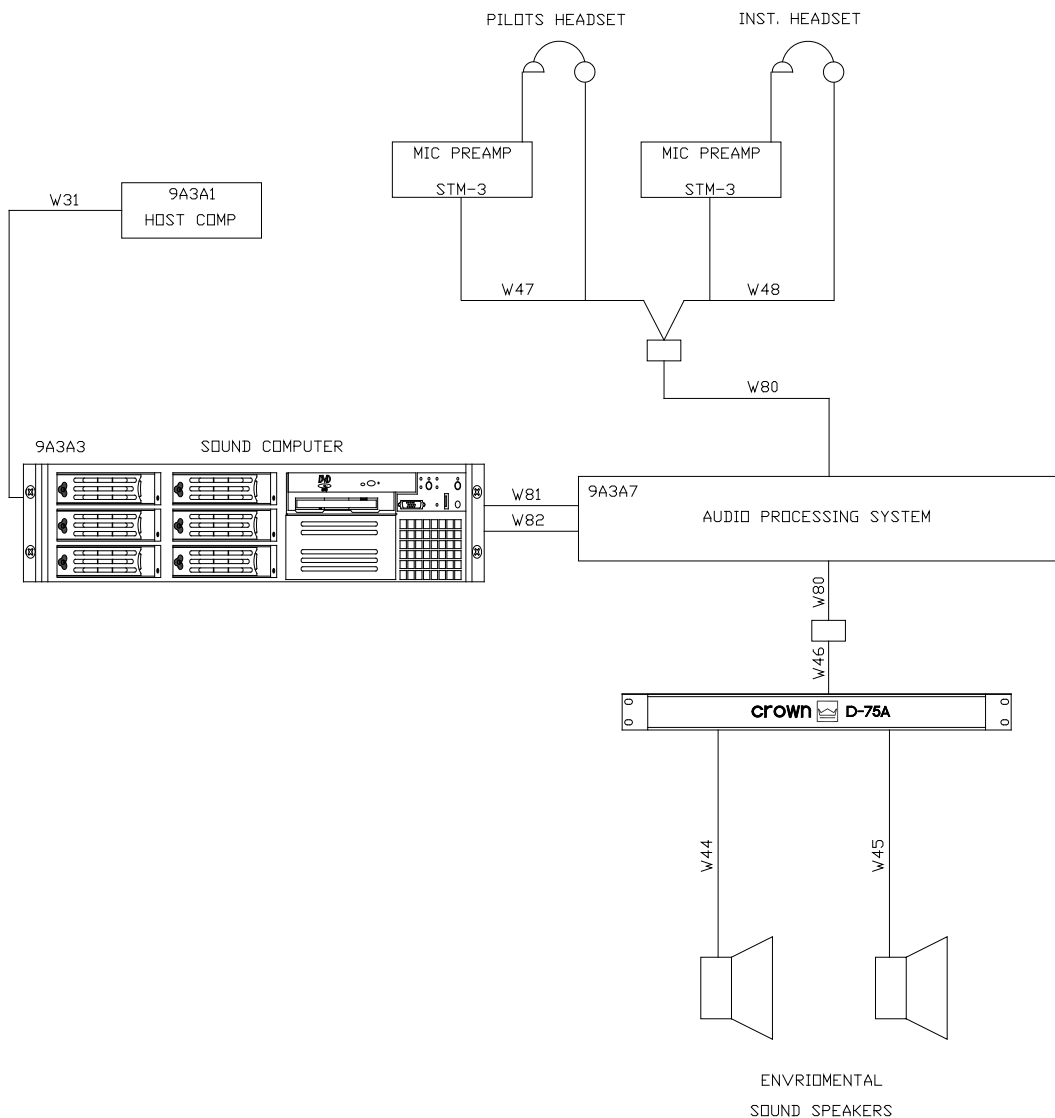
If the networking is not successful, re-accomplish Steps 2 through 8. Additional troubleshooting steps are located in Section 5.

2.5. SUBSYSTEM CABLE CONNECTIONS

Engineering drawings describe internal and external cable connections in the FTD. Refer to engineering drawing 6520AEA001 for the Cable Installation Top Level Assembly. Section 6 also contains a listing of System Diagrams and electrical schematics that will be beneficial in troubleshooting the equipment.

2.5.1. APS

Cable connections are shown in Figure 2-45. Refer to engineering drawing 6520ABN201 for the Top Level Cable Installation.



-502 BLOCK DIAGRAM

Figure 2-52. Cable Connections

2.6. FTD CHECKOUT

Perform the FTD checkout before powering up the simulator. By doing so, you can verify that simulator hardware is properly set up to receive power without damage to the equipment.

2.6.1. Pre-operational Checks

- Verify that all circuit boards are properly configured.
- Verify that the circuit boards are properly seated in their connectors.
- Confirm that all hardware is properly installed.
- Remove restraining devices from contactors, and shunts from current transformers.
- Confirm the area in and around the components is clean.
- Check all connections for mechanical and electrical tightness.
- Close all access plates and doors.

2.6.2. Initial Control Settings Checklist

2.6.2.1. Host, FDKIO, IOS, and ECL Computer Chassis

Figure 2-53 shows the location of each chassis.

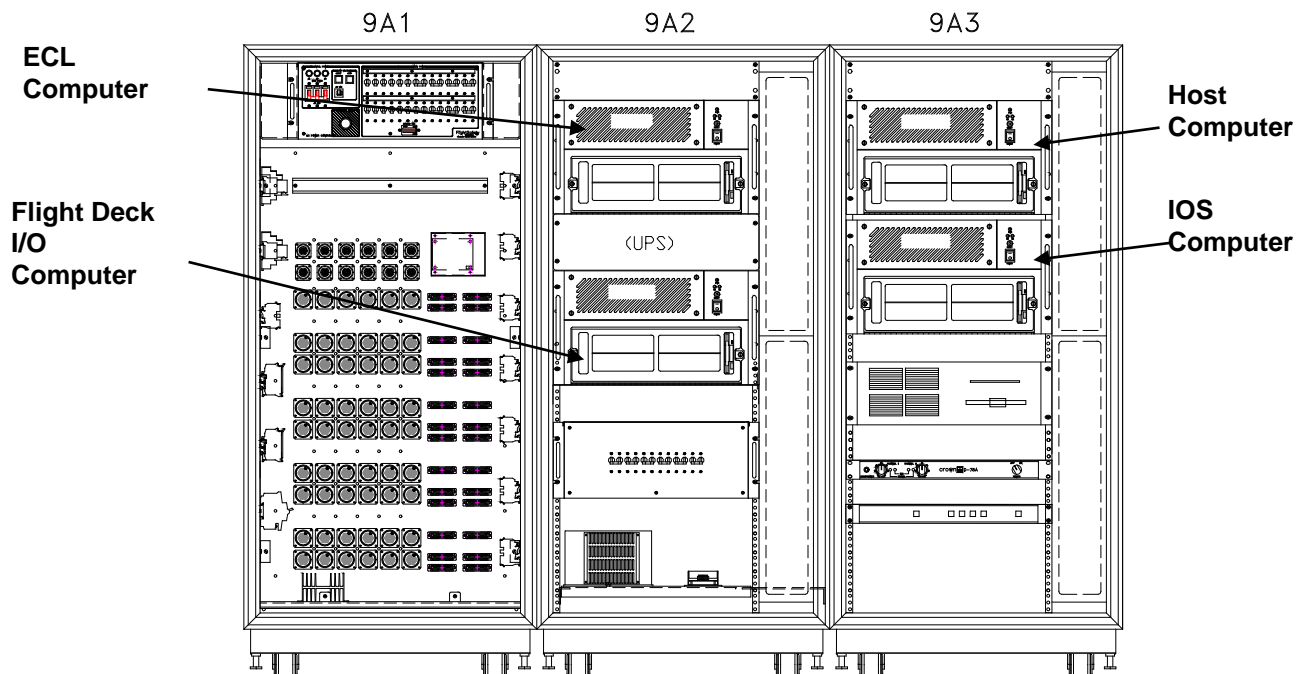


Figure 2-53. Computer Chassis Locations

- Confirm that the two power supply switches on the rear of each chassis are both in the On (I) position. See Figure 2-54.

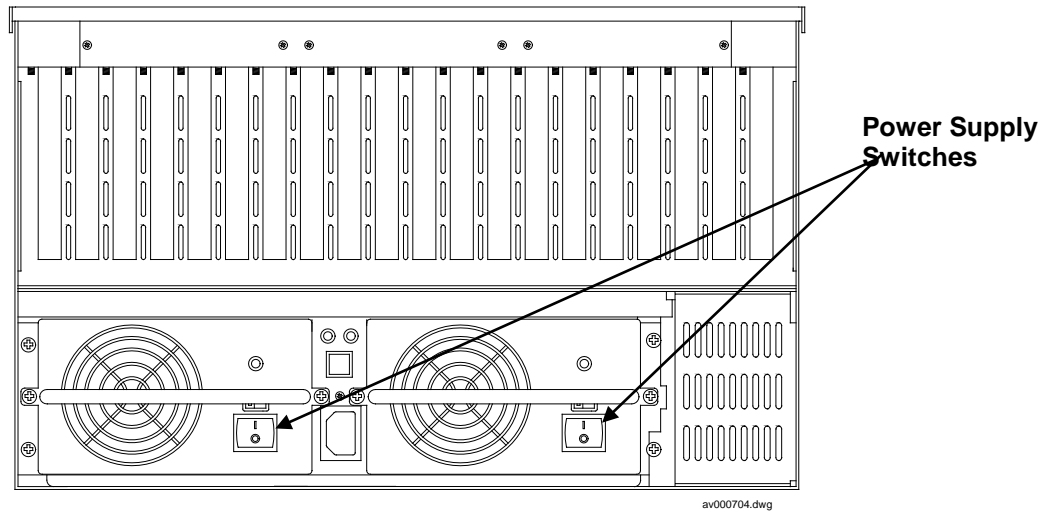


Figure 2-54. Power Supply Switches on Rear of Computer Chassis

- Confirm that the AC power switch on the front of each chassis is in the On (|) position.

2.6.2.2. APS Sound System

The following are initial settings of the APS Sound System components prior to Sound System operation.

- 1) Ensure the Power Control System is powered up and Main Power is ON. Refer to Section 3 of this Manual.
- 2) Ensure the hard drive and power supply on the Sound System Computer are installed correctly and locked in position.
- 3) On the rear of the APS unit, verify the AC power cord is plugged into the chassis and the power switch is ON. Ensure the ground switch is set to “DIRECT”.

2.6.2.3. Data Acquisition System

The DAS chassis is located at the bottom of the 9A3 cabinet. In the upper right corner of the front panel, confirm AC Power Indicator is illuminated. See Figure 2-55 for locations of the power indicator and power switch.

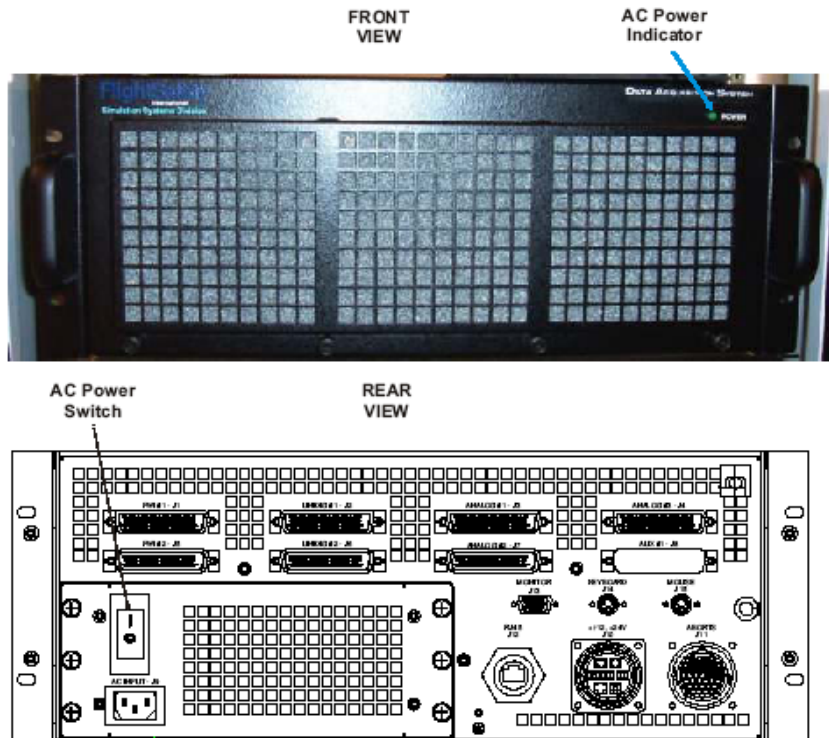


Figure 2-55. DAS

2.6.2.4. Digital Servo Remote Power Controller

On the OFT and IFT confirm that all circuit breakers are in the On (up) position. See Figure 2-56.

NOTE

On the UTD, the Seat Digital Servo (CB6) circuit breaker should be in the Off (down) position.

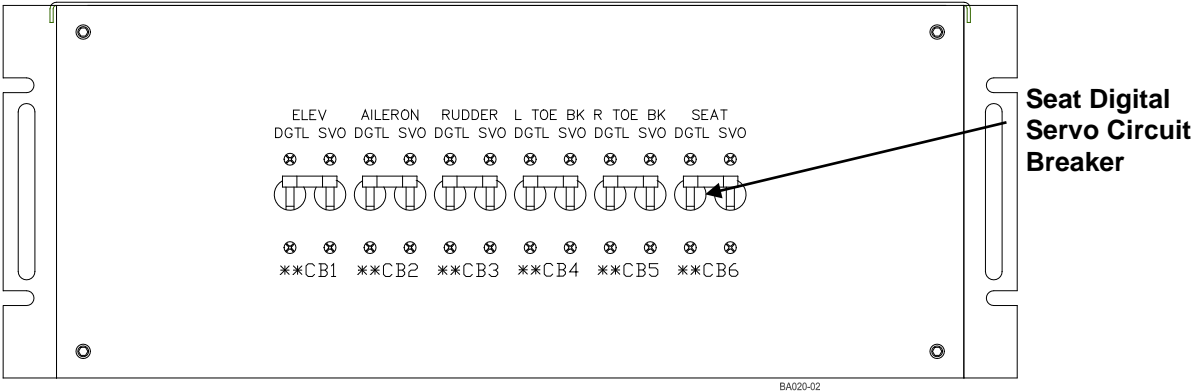


Figure 2-56. Digital Servo Remote Power Controller

2.6.2.5. 7A2 Patch Panel

Confirm that the fuses located on the E01 Din Rail of the 7A2 Patch Panel are latched closed. See Figure 2-57 for the location of the fuses.

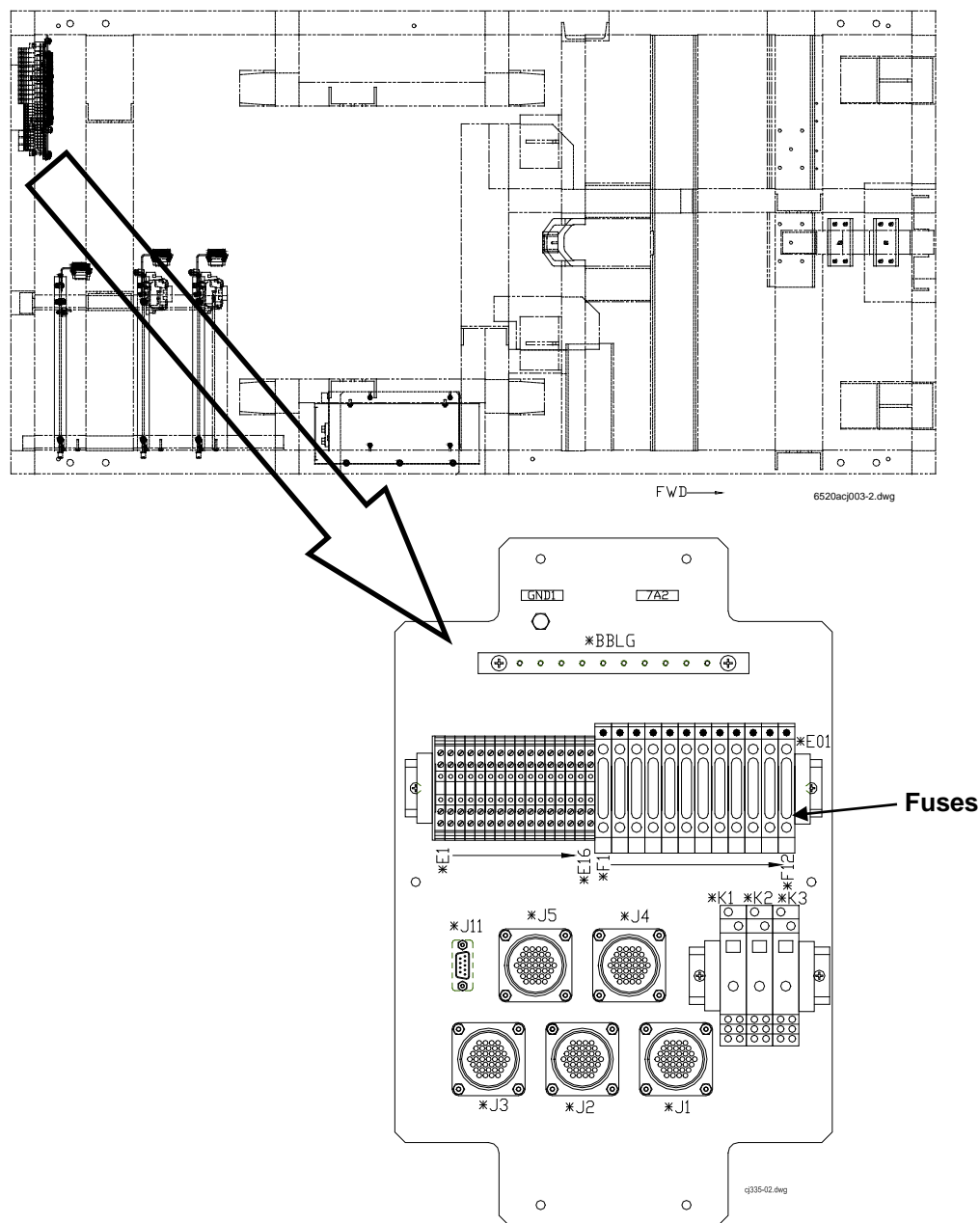


Figure 2-57. 7A2 Patch Panel Fuse Location

2.6.2.6. Digital Servo Amplifier

Ensure the digital readout on the top of each Control Loading and Seat Servo Amplifier reads “d”. This indicates the power stage is disabled, the amplifier is ready, and no errors exist. Figure 2-55 shows the location of the Servo Amplifiers.

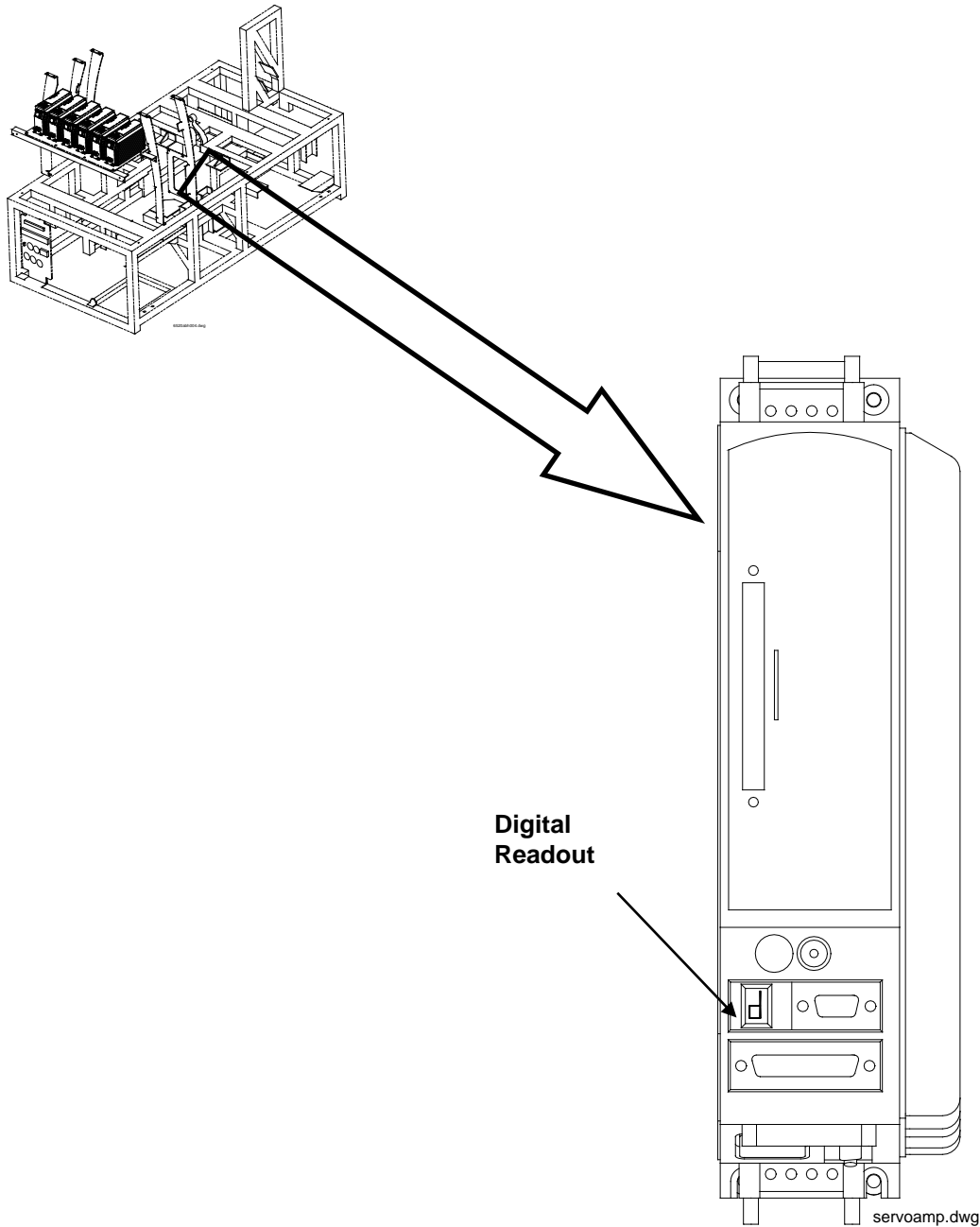


Figure 2-58. Servo Amplifiers Location

2.6.2.7. Power Controller

Confirm that all branch circuit breakers are in the On (up) position. See Figure 2-59.

Confirm that the three pole Main Power circuit breaker is in the On (up) position.

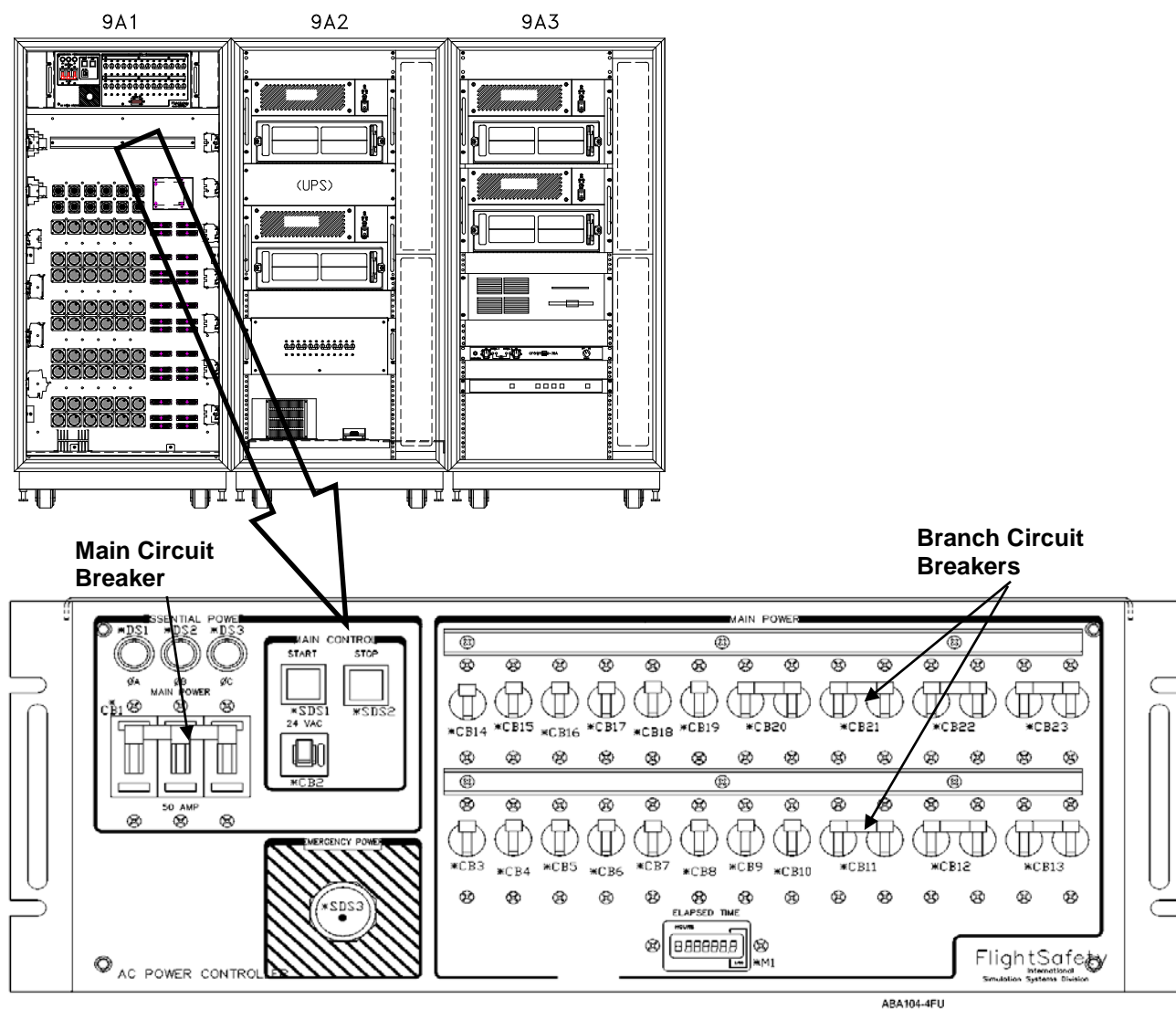


Figure 2-59. AC Power Controller

2.7. ATD STARTUP PROCEDURES

CAUTION

**ENSURE THERE ARE NO OPEN MISSION
CRITICAL/SAFETY WORK ORDERS**

NOTE

Check that the Fire Panel AC Power light is ON and all trouble and alarm lights are OFF. Typically, alarm lights glow faint red.

Turn PCL Friction knob to remove friction before booting computers.

2.7.1. Equipment Cabinet 9A1 A/C Power Controller Panel

- 1) Turn ON the 50-amp Essential Power Breaker.
- 2) Check that all Main Power circuit breakers are ON and the 3-phase power indicators are illuminated.
- 3) Push “Start”.

NOTE

If Powering-up a Unit Training Device (UTD), skip 2.7.2. and 2.7.3.

2.7.2. Image Generator Cabinet

- 1) Check that the I.G. Cabinet is powered up with proper indications.
- 2) Check that the I.G. Cabinet Fans are working.

2.7.3. VCC Computer

- 1) Power up the VCC computer.
- 2) After boot, login.

NOTE

For security reasons Login procedures will not be entered here.

- 3) The Vital control screen status bar will indicate, “Real-Time is not running.”
- 4) From Heading Bar select “Visual” – then select “TAP Start.”
- 5) Status Bar should now indicate “Real-Time is running.”

- 6) Projector power: On (DMS for OFTs)

2.7.4. Equipment Cabinet 9A2

- 1) On the Uninterruptible Power Supply (UPS), check for proper indications:
 - a) Load bar graph (computer) indicates ½ scale.
 - b) On-line (sine wave) indicator illuminated.
 - c) Battery charge graph (battery) indicates nearly full scale.
- 2) Check that the ECLS computer is powered up with proper indications.
- 3) Check that the Flightdeck Computer is powered up with proper indications (remove PCL friction prior to booting).
- 4) Check that the Servo Amplifier Circuit Breakers are ON (except seat on UTDs).
- 5) Check that the 9A2 Cabinet Fans are working.

2.7.5. Equipment Cabinet 9A3

- 1) Check that the Host Computer is powered up with proper indications.
- 2) Check that the IOS Computer is powered up with proper indications.
- 3) Check that the Sound Computer is powered up with proper indications.
- 4) Check that the APS unit is powered up with proper indications.
- 5) Check that the Sound Amplifier is powered up with proper indications.
- 6) Check that the Channel Selector is powered up with proper indications.
- 7) Check that the 9A3 Cabinet Fans are working.
- 8) DAS equipped: Check that the DAS is powered up with proper indications.

2.7.6. Cockpit Frame

- 1) Verify PCL friction is off (see NOTE in 2.7).
- 2) Check that the Servo Actuator Fans are working.
- 3) Verify Dynamic Seat is free of obstructions.

2.7.7. IOS Station

- 1) Num Lock twice – Select ACS – Enter.

NOTE

For replacement KVMs (spares), hit
 SCROLL LOCK twice instead of NUM
 Lock.

NOTE

Ensure SimSound TRAIN auto-start window is open and running.

“Running” icon should be flashing.

- 2) Num Lock twice – Select FDKIO – Enter.
FDKIO should display FDKIO screen w/clock running.
- 3) Num Lock twice – Select IOS – Enter.
- 4) Ctrl-Alt-Delete – OK to Attention screen.
- 5) Login.

NOTE

For security reasons, Login procedures will not be entered here.

- 6) From login desktop select “Start IOS.”
 - a) Right monitor should display “Untitled FSISuite.”
 - b) Left monitor displays *Reposition* page.
- 7) Num Lock twice – Select “HOST”.
 - a) At Host screen, Type: Reboot [space] 6
 - b) Enter. Host will scroll through several screens as it boots. IOS control panel switches should illuminate.
- 8) Num Lock twice – Select “ECLS”.
 - a) Press System Reset switch located behind seat on left side of cockpit. Host screen should display “DRI has been reset.”
 - b) Press CONT LDG ARM switch on the IOS control panel. Left monitor will scroll calibration of Elevator, Aileron, Left Brake, Right Brake, and Rudder.
 - c) After “Set Up Complete” message, ensure seatbelt is buckled (OFT, IFT) and press DYN SEAT ARM. Left monitor will scroll Seat calibration.
 - d) If DAS equipped, num lock twice to insure DAS is up and ready, then, “Num Lock twice – Select ECLS”.
- 9) Num Lock twice – Select “IOS”.
Select “Freezes and Resets” then Quick Start, or start engine manually.
- 10) Bring up cockpit.

NOTE

The cockpit should be powered up to verify proper operation. After verification, cockpit can be powered down for student training.

- a) Master Battery/Generator to ON.
- b) Reset Master Warning and Master Caution switches.
- c) Depress Generator Reset switch.
- d) Cycle PMU switch to *off*, then back to *normal*.

2.7.8. Cockpit and IOS Station

- 1) Initialize Control Loading as required.
- 2) Reposition aircraft to active runway position.
- 3) Take system out of freeze.
- 4) Check that all Circuit Breakers have been reset.
- 5) Check Aux Battery Test.
- 6) Turn Master Battery and Generator Switches ON.
- 7) Check that PCL, Aileron, Elevator, and Rudder controls move freely in each direction.
- 8) Check Lamp Test.
- 9) Check AOA Test.
- 10) Check Audio Ovr Spd/Ldg Gr Test.
- 11) Check Fire Warning Test.
- 12) Check GPS for function. Ensure flight plans are loaded.
- 13) Load a Flight Plan; ensure it appears on HSI in MAP Mode.
- 14) Check RMU for function. Ensure presets are loaded.
- 15) Verify UHF, VHF and INPH functions between IOS and Cockpit.
- 16) Check Composites on ADI and HIS.
- 17) Check Rudder, Aileron and Elevator Trim Switches and verify Trim Indicators.
- 18) Manually start Engine.
- 19) Fly a “local pattern.”
 - a) Check Visual for proper alignment and picture integrity.
 - b) Check that Standby Indicators agree with the Primary indicators.
 - c) Check that all Instruments agree with the IOS Repeater.

- d) Check Controls for proper reaction, feel, sound and function.
 - e) Fly a roll and a loop checking for sticking indicators.
 - f) Check Aural Cues for proper sounds
- 20) Land, come to a complete stop, and set Parking Brake.
 - 21) Set Flaps to UP.
 - 22) Shut down Engines.
 - 23) Set all Cockpit Switches to NORMAL, AUTO or OFF, in that precedence. (Cockpit power will be off.)
 - 24) Ensure REMOVE BEFORE FLIGHT pins are installed in the seat and canopy fracture handles.
 - 25) Check Seat Harness for wear or damage.
 - 26) Inspect Seat Proximity Switch and cable for damage.
 - 27) Position Belts and Leg Restraints.
 - 28) Set Canopy Lever to OPEN.

2.7.9. IOS Station

- 1) Set the left IOS Monitor to the Reposition Page.
 - a) Set the Active Airport as required.
 - b) Reposition to RAMP.
- 2) Set the right IOS Monitor to the Area Map.
 - a) Set Scale to 30 miles.
 - b) Set Map Center to Airport.
 - c) Set Spider Web to Airport.
 - d) Set Symbol Display to display Obstacles & Text and Practice Areas & Text.
- 3) Check IOS Console Switches and Knobs for secure installation and/or damage.
- 4) Set all Volume Controls to the 3 o'clock position.
- 5) Set Radio Select switch to INPH.
- 6) Set Mic Select switch to HOT.
- 7) Set Audio V/R/Both switch to BOTH.
- 8) Check printer paper supply.
- 9) Clean monitor screens as required.
- 10) Set IOS Utility Lighting to half bright (except UTDs).

LOOK AROUND. Ensure that everything is clean, sharp, and ready to go.

2.8. STORAGE

The following guidelines apply not only to storing the FTD, but also to storing all the components in the system that have been ordered as spares.

- Store in a clean, dry area of moderate temperature.
- Cover with a suitable canvas or heavy plastic cover to prevent entrance of foreign material.
- If the equipment is stored in a cool damp area, it should be completely covered and heat should be provided to prevent moisture or condensation from forming.